

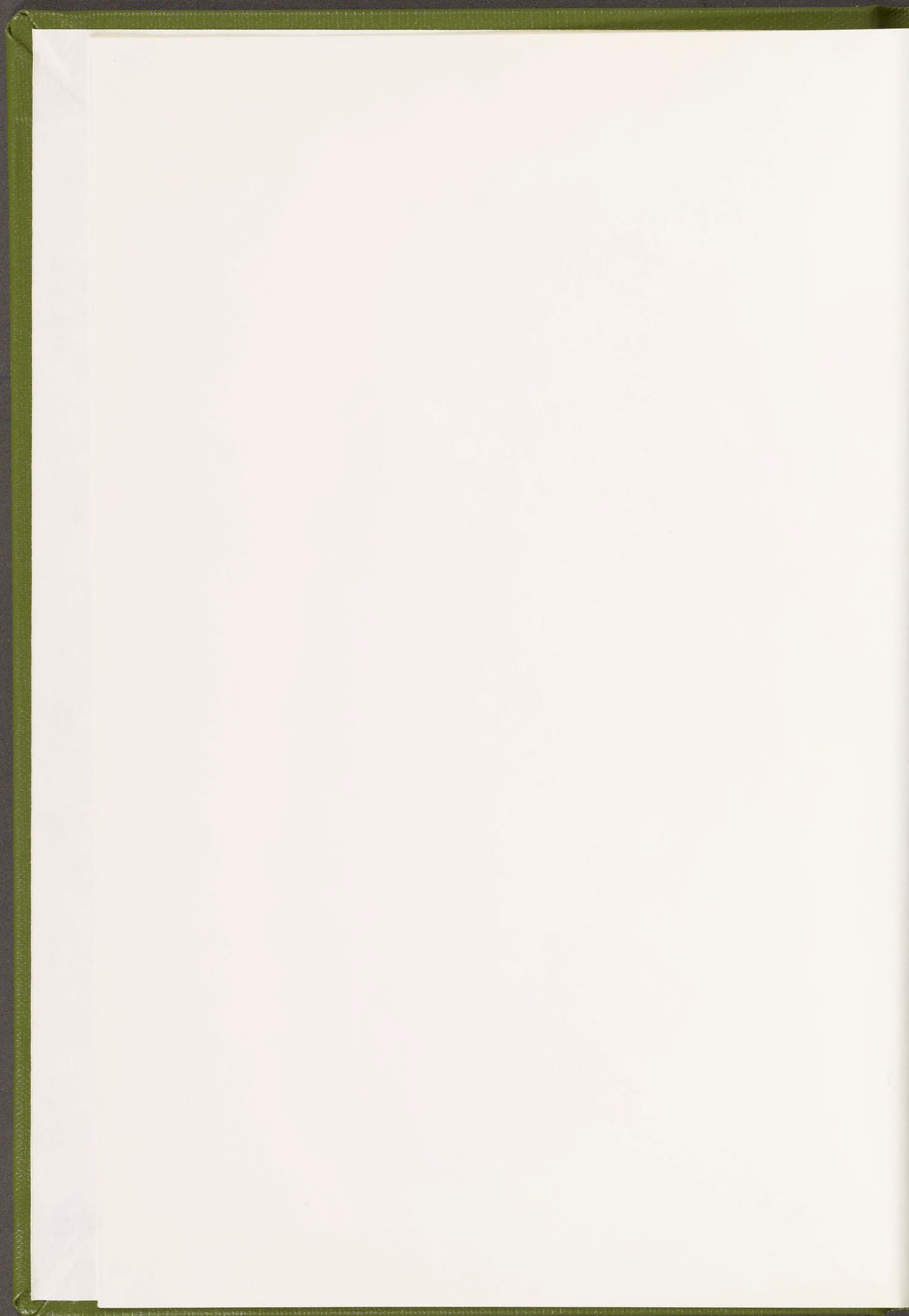
PRECIOUS
METALS

KING



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2nd Ann Rept USGS For 1881, 1882

PRODUCTION OF THE PRECIOUS METALS

IN

THE UNITED STATES.

BY

CLARENCE KING.



LETTER OF TRANSMITTAL.

NEW YORK, *November 1, 1881.*

Hon. J. W. POWELL,

Director of the U. S. Geological Survey, Washington, D. C. :

SIR: I have the honor herewith to transmit a tabulated statement of the production of the precious metals in the United States for the census year, between June 1, 1879, and May 31, 1880. This statistical statement is offered in advance of my report upon the production of the precious metals on account of its immediate interest to legislators, financiers, and metallists. It will form the concluding chapter of a forthcoming volume devoted to the technological aspect of the precious metal industry. That volume will contain an elaborate discussion of the distribution of precious metal mines and their methods of exploitation, together with abundant data on the mechanical, chemical, and metallurgical processes employed in the industry, all classified and treated from a statistical point of view.

For the purposes of the present publication, it is only necessary to report the organization and personnel of the investigation.

The general direction of this branch of the census inquiry was committed by the Superintendent of Census to the undersigned, then Director of the United States Geological Survey.

For purposes of convenient administration, I divided the United States into three leading divisions :

The division of the Pacific, consisting of the States of California, Nevada, and Oregon, and the Territories of Arizona, Idaho, Utah, and Washington ; an area made up of the States and Territories bordering on the Pacific Ocean and the political divisions of the Great Basin. The leading reason for this arbitrary grouping of political divisions is that they are for the most part tributary to the great mining center of San Francisco. A very large portion of the capital employed and of the personal ownership center in San Francisco, which is also the source whence the greater part of the mining machinery, appliances, and materials are drawn.

PERSONNEL OF THE PACIFIC DIVISION.

The headquarters of this division was placed in San Francisco, and the direction of the work confided to Mr. George F. Becker, United States Geological Survey, geologist in charge of the Pacific division.

Mr. J. M. Cunningham, for the eastern portions of Washington and Oregon, and the northeastern part of California.

Mr. J. S. Curtis, Nevada, south of the line of the Central Pacific Railway.

Mr. J. H. Hammond, central and eastern counties of California.

Mr. D. B. Huntley, Utah, Southwestern Nevada, and portions of California.

Mr. H. W. Leavens, the tract lying west of the Cascade and Coast ranges in Washington, Oregon, and Northern California.

Mr. Walter Nordhoff, Southeastern and Middle Arizona.

Mr. H. W. Sander, Western Arizona.

Mr. Luther Wagoner, Southern California.

Mr. Albert Williams, jr., Idaho, Nevada north of the Central Pacific Railway, and the Comstock lode.

PERSONNEL OF THE DIVISION OF THE ROCKY MOUNTAINS.

The division of the Rocky Mountains adjoins the division of the Pacific on the east, and extends eastward as far as the 100th meridian, including the State of Colorado and the Territories of Dakota, Montana, New Mexico, and Wyoming. At the head of this division was placed Mr. S. F. Emmons, United States Geological Survey, geologist in charge, with headquarters at Denver.

Mr. W. B. Fisher, portions of Lake, Chaffee, Clear Creek, and Gilpin Counties, in Colorado, and Beaverhead County, in Montana.

Mr. William Foster, Montana and Wyoming.

Mr. J. E. Hardman, the smelting works in Lake County, Park and Summit Counties, and portions of Clear Creek and Gilpin Counties, in Colorado.

Mr. Charles Potter, New Mexico.

Mr. E. H. Schaeffle, Dakota and portions of Colorado.

Mr. W. G. Sharp, San Juan, Hinsdale, Gunnison, La Plata, Huerfano, Ouray, and Rio Grande Counties in Colorado, and portions of New Mexico.

In addition to the census experts the following-named gentlemen acted as temporary assistants: Messrs. Herman Garlich, J. C. Hine, H. B. Price, H. L. Simmons, and W. H. Whittlesey, in Colorado, and W. F. Wheeler, in Montana.

PERSONNEL OF THE EASTERN DIVISION.

The eastern division comprises the whole territory lying east of the 100th meridian. Prof. Raphael Pumpelly, United States Geological Survey, was placed in charge, with headquarters at Newport, R. I.

Mr. George H. Eldridge, Southern States and reduction works east of the 100th meridian.

Prof. N. S. Shaler, with the assistance of Messrs. Joseph M. Wilson and J. E. Wolff, New England States.

To each of these three chiefs of division was committed the responsibility of choosing his own assistants, who were in due form appointed by the Superintendent of Census as special experts.

All the leading precious-metal districts of the United States were visited by the corps of experts, and their observations were entered in the field upon a uniform system of printed schedules.

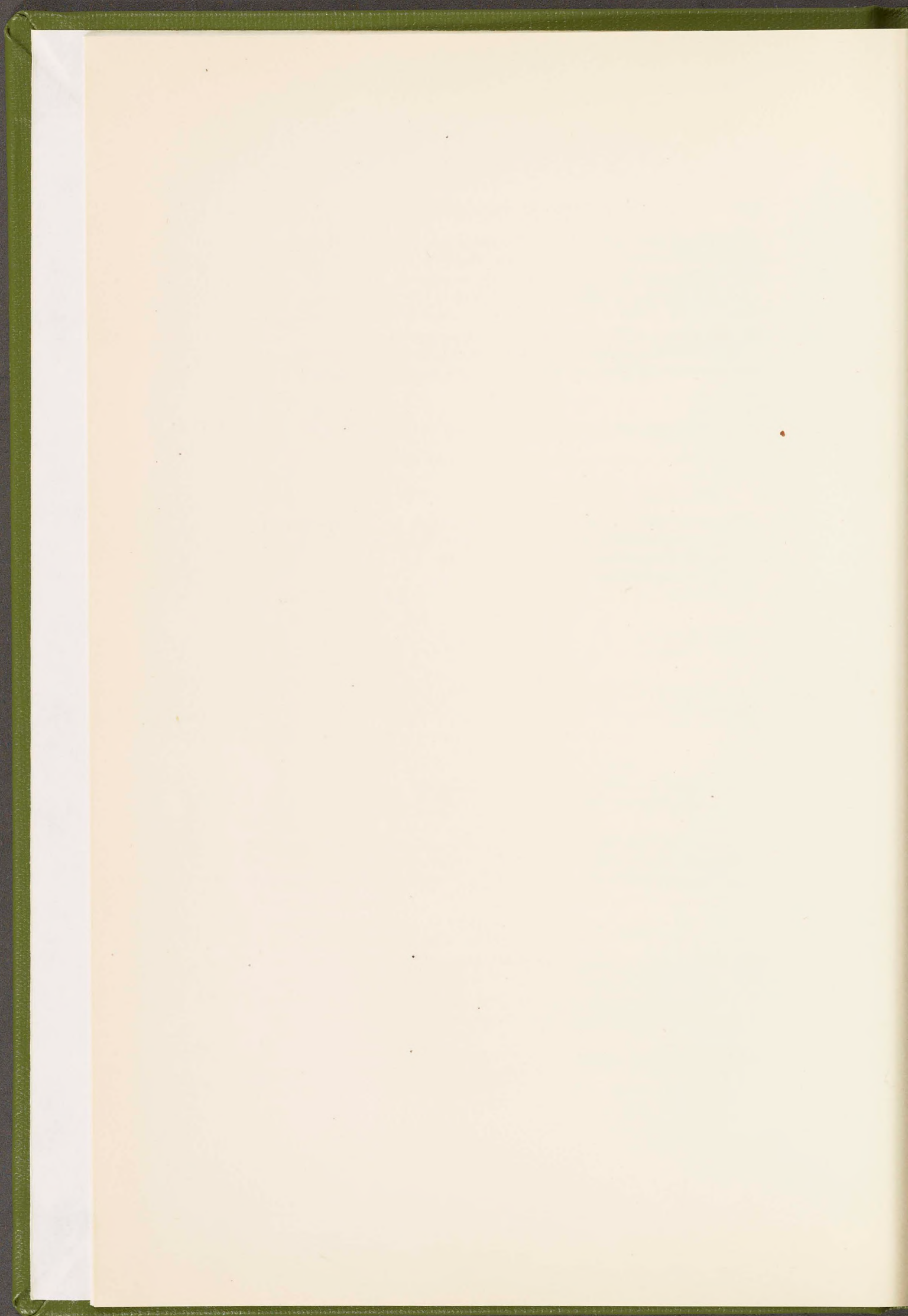
The following list shows the number and character of reports returned, which form the basis of the statistical tables in this publication:

Deep mines.....	1,967
Placer mines.....	325
Amalgamating mills, concentration works, chlorination and leaching establishments.....	327
Smelting works.....	86
Arrastras.....	25
Total number of reports.....	2,730

The entire work of compilation and tabulation has been performed under the personal direction of Mr. Albert Williams, jr., special expert in charge of compilation.

Very respectfully, your obedient servant,

CLARENCE KING.



PRODUCTION OF THE PRECIOUS METALS.

BY CLARENCE KING.

METHOD FOLLOWED IN COMPILATION.

Three principal methods have been adopted by statisticians in studying the bullion production of the United States.

The first and most obvious plan has been to use as a basis the receipts of domestic bullion reported by the several mints and United States assay offices, ascertaining the probable total product by adding to the figures thus obtained the amount shipped abroad, as shown by the custom-house returns, and the probable amount consumed in the arts. The objections to this method are: The amount coined within a certain period does not necessarily correspond to the production for that period. In the same way the proportion of the domestic product exported may be largely affected by the stock of precious metals on hand at any given time. Both of these variations depend primarily upon fluctuations in the bullion market and international balance of trade. An average of a long series of years would give tolerably accurate results, but for any stated period, the figures of coinage, export, and consumption in the arts are apt to be deceptive.

Assuming the source of the bullion deposited at the mints to be correctly stated, there are still serious and unavoidable defects in the custom-house statistics, notwithstanding the care taken to secure accuracy. No account is taken of bullion transported overland into Canada, nor are the export figures for doré bullion, base bullion, ores, and matte shipped abroad always to be depended upon. This difficulty is particularly manifested in the last three instances. The regulations prescribed by the custom-house authorities are not followed by penalties sufficient to insure accurate invoicing of the values thus exported. It is well known that during the period of intense speculation in gold a very large proportion of both receipts and exports even of gold coin was entirely hidden from official scrutiny, with a still greater margin in the bullion movement; and although the inducements to a concealment of the actual movement do not now exist in the same force, it is still doubtful whether the official figures are entirely reliable. A less important source of error is the undisputed fact that not infrequently bullion of domestic

production, after having been shipped abroad, is, from changes in the silver-bullion market or from the necessities of coinage, reimported into the United States.

It will thus be seen that the best results which can be hoped for from the most careful application of the "consumption and export" method are close approximations extending over considerable periods, but not the exact product for any given year. The system also fails to segregate the yield according to the productive source; and while the geographical distribution by State and Territorial lines may be shown, it is hardly possible to carry the analysis further and ascertain in this way the yield of single districts or even counties.

The Director of the Mint has examined the bullion product of the country critically from the "consumption and export" point of view, employing as a supplementary means of information the details obtainable by correspondence and circulars scattered through the mining districts. The substantial accuracy of the estimates of the total production thus reached has been fully borne out by the results of the present investigation.

The second, or "transportation," method consists in estimating the product from the statistics of the express companies, freight lines, and banks which have the handling of the product from its original sources. This plan would give more satisfactory results if, in the first place, all the bullion, ores, etc., were transported from the producing points through these different channels alone; and if, in the second place, none of the product were reshipped from point to point, and thus twice recorded. As a matter of fact, there is a considerable portion of the gold yield sent through the mails as registered matter, and a large proportion passes from the productive source into the market through private channels. Both of these means of conveyance are affected by proximity to main lines of communication, or, on the other hand, by the absence of express or railroad facilities; and in neither can the exact effect of these circumstances be very definitely counted upon. In the Pacific States and Territories the great bulk of the mine output is handled by Wells, Fargo & Co.'s express, and upon the detailed returns of the many offices of this company Mr. J. J. Valentine, general superintendent, has been enabled to furnish very valuable estimates of the bullion production, covering a long series of years. The business connections of this express company in portions of the country not covered by their agencies have rendered it possible for Mr. Valentine to frame approximate estimates of the product of the mining territory outside of that from which Wells, Fargo & Co. are the principal transporters of bullion. But the impossibility of assigning to other channels the due proportion of the outflow through them; the fact that no record is made of the value of the gold bullion and dust sent through the mails; that no reliable allowance can be made for the undervaluation of gold dust and unassayed bullion by consignors, amounting in many cases to from

five to ten per cent.; that there is no satisfactory means of checking the reshipments which are twice or more times recorded, combine to create a large margin which can hardly be definitely accounted for in making the total estimates. The looseness in the distinction observed between silver bullion and doré metal allows a considerable portion of the gold contents of doré bullion to escape the record, the whole value of such bars often being credited to silver; while, on the other hand, of course no account is taken of the value of the silver alloyed with placer dust and gold bullion, though this is a less important source of error. Notwithstanding these palpable but unavoidable defects in the system, much credit is due Mr. Valentine for the painstaking care with which he has prepared his annual estimates.

The third system is one which, were it practicable to pursue into complete details, would lead to results more satisfactory than could be obtained in any other way. This may be termed the direct method. It would consist, if properly carried out, in obtaining from each bullion producer a statement of the quota contributed. The aggregate of the details thus reached would represent the actual total product of the country, and would, moreover, segregate it according to districts. In the census work conducted by the United States Geological Survey, the plan indicated has been followed to as minute detail as it was possible to extend it with the means at command. No attempt had ever been previously made which aimed at securing individual returns throughout the whole United States with the same degree of thoroughness; though the successful adoption of the direct method by Mr. A. Del Mar, in his investigation of the silver product of Nevada in 1876, showed the advantages of the plan. But even with all the care and time expended by the experts engaged in collecting these statistics, it was found to be impracticable to do more than obtain returns from the larger producers. In some instances well-based and careful estimates were submitted by the experts, covering aggregates of a large number of small mines, for whole districts. In other cases, and more especially so in portions of the country where placer-mining on a small scale furnished a large proportion of the yield, reliance had to be placed on extraneous data.

The chief obstacles encountered in the collection of bullion statistics directly from the producers were—

First. The wide extent of the field to be covered, and the vast number of mines to be reported upon. Even were the mines located in easily accessible places, the wide range of territory over which they are scattered would render the labor of personally visiting each productive district a tedious matter. But when it is considered that they are for the most part to be found in rugged mountainous tracts, often at high altitudes, and, when destitute of railroad communication, to be reached only by stage or on horseback, some idea may be gathered of the amount of work involved.

Second. The fact that a considerable yield is derived from small mines,

the product from each of which, however insignificant in itself, goes to form part of an important aggregate, and should not be neglected.

Third. The reluctance of some mine owners and superintendents to give a full account of their operations, notwithstanding the strictly confidential manner in which these individual statements have been treated. On explanation of the purposes for which the statistics were collected, such objections were in most cases overruled, however, and invariably great courtesy was personally manifested.

Fourth. The fact that in a large majority of cases no systematic accounts are kept by mine owners, who were often unable to state from memory the precise output of their properties for a period which had elapsed some time before the inquiry was made.

Fifth. Many mines having changed hands during the census year, it was frequently impossible to obtain from the present holders a statement of the operations conducted prior to the change in ownership, or to communicate with the former owners if they had removed.

Sixth. When in the case of mines worked during only a portion of the census year, or during a season limited by the weather, water supply, or other causes, operations had been suspended at the time the district was visited by the examining expert, it was often impracticable to communicate with the only persons able to supply information.

Seventh. The variation in the fiscal year of the incorporated companies makes it a matter of much difficulty to reduce the returns to a different period from that for which the books are kept.

With means still less adequate than were lately at command, the census authorities in 1870 found it impossible to trace the bullion product of the country at that time. The best results reached by the deputy marshals in certain instances hardly amounted to a moiety of the actual product, as known through other sources of information. In the case of the census of 1880, even with greatly increased facilities, there were many gaps in the testimony, which had to be filled out by estimates derived from other data than those collected directly by the experts. Where such estimates have been applied in the tabulation, they have been indicated by an asterisk (*). In all cases a careful scrutiny has been exercised in the selection and comparison of material. It is believed, in view of the more extended and fuller details accessible, as compared with previous researches of the same nature, that the results arrived at in this compilation are as close an approximation to absolute accuracy as it is possible to attain without a far greater expenditure of money and time than the subject demands.

In compiling the material at hand the following system was adopted: The returns given in the individual mine schedules were first abstracted and grouped into aggregates for districts. Information as to the operations of the different establishments being in many cases confidential, publication of the results begins in the census report with the district exhibits, which, in the following pages, have been condensed into tables

for counties, and finally into abstracts for whole States and Territories. Where a marked discrepancy existed between the schedule returns and other reliable data, the necessary additions were entered and the fact that they were estimates indicated. It is hardly necessary to remark that the schedules would show deficiencies rather than an excess as compared with correlative data. At the same time the schedules of reduction works were examined, and furnished a valuable check upon the figures derived from the mine reports. In some instances the yield was quoted in ounces of fine metal, as is customary in localities where the ore is reduced by smelting; in others, in ounces of crude bullion, as in the case of placer gold; in still others, in dollars calculated from the assay value of the bullion; and more rarely, in dollars representing the net proceeds after deducting the discount upon silver and other charges. In order to present the whole in harmonious shape, it became necessary to reduce these various denominations to a uniform standard. That adopted is the troy ounce of fine metal and its assay value in United States money. The terms are interchangeable and appear side by side in the tables of production. As a preliminary step a series of conversion tables were prepared.

CLASSIFICATION OF MINES.

Mines of the precious metals are grouped under two comprehensive heads: deep mines and placer mines. The former are workings in primary deposits, in which the ore usually, though not invariably, occurs in a vein, and while the earlier operations in mines of this class may begin at or near the outcrop of the vein, the tendency is always downward. The leading varieties of deep mines are:

1. Mines of free gold, or gold alloyed with a small proportion of silver.
2. Mines of silver ores, containing only traces of gold.
3. Mines yielding doré bullion from milling ores containing both gold and silver in appreciable quantities.
4. Mines yielding base bullion from smelting ores in which the precious metals are associated with larger quantities of lead, copper, etc.

All these divisions shade imperceptibly into each other.

Placer or gravel mines are workings in secondary or fragmentary gold deposits, including gravels and sands, and are either surface or shallow workings. The leading types are:

1. Hydraulic mines.
2. Dry washings.
3. Booming and shovel-slucing.
4. River mines.
5. Pocket mines.
6. Drift mines.

7. Branch mines.
8. Black sand littoral deposits.

In the tables of production the classification under these two main heads is observed.

CLASSIFICATION OF REDUCTION WORKS.

In some of the following tables a distinction is made between the production as shown by the different reduction works, which, like the mines, are divided into two principal classes. These are, first, amalgamating mills, including—

1. Gold-quartz mills.
2. Mills in which silver ore is treated in the raw state.
3. Mills in which roasting is practiced before amalgamation.
4. Concentration works.
5. Chlorination and leaching establishments.
6. Arrastras.

The second class includes the several varieties of smelting works in which the production of base bullion, matte or speiss is a preliminary step toward the final extraction of the precious metals.

Placer mines, with the exception of pocket mines and branch mines, require no reducing process; and in the two exceptions named the mill process is not always a necessary concomitant; in the former, in fact, but rarely. Various systems of reduction by chlorination and amalgamation have also been applied to black-sand deposits and refractory conglomerates containing placer gold, but not to an extent affecting the general principle of classification here maintained.

[NOTE.—In each of the tables of production and throughout this discussion the following explanations apply:

The short ton of 2,000 pounds is invariably used.

The ore tonnage is stated in gross tons; the assay values are of net tons, without allowance for moisture.

Mint values are assumed in all cases. The weight of bullion is given in troy ounces of fine metal. The gold ounce is taken at \$20.671834 and the silver ounce at \$1.2929. A statement of the estimated market value of the silver is elsewhere appended.

No account is taken of the value of the silver alloyed with placer gold in the primary production tables, as, with very few exceptions, no allowance is made for it in selling. This is treated of separately and the proper addition made in the final summary.

The bullion yield is given according to the county in which the ore producing it was raised, without regard to the locality where the ore was reduced. This method of stating the product apportions it with reference to the original source so far as it is practicable to trace it.

Were the yield to be credited to the reduction works, Omaha, Chicago, Saint Louis, Newark, New York, and other points remote from the mines, would appear as large producing centers.

Individual estimated amounts are designated by an asterisk (*), and where such estimates form a considerable proportion of the totals the fact is similarly indicated.]

STATISTICS OF THE PACIFIC DIVISION.

CALIFORNIA.

In production of gold California still holds the first place. The vast deposits of auriferous gravel continue to yield largely, though their final exhaustion, in view of the enormous hydraulic operations now being prosecuted, is to be looked for at no very distant day. Previous to the discovery of the Bodie district the placer mines furnished more than two-thirds of the total gold output of the State, but the large yield of that district, amounting to over two and three-quarter millions in gold during the year, in addition to the considerable silver product, has placed the deep mines about on a par with the placers in point of productiveness. The amount of silver contributed by California is relatively small, and comes mainly from two adjoining counties, Inyo and Mono.

There are a larger number of actively working mines in California than in any other State or Territory, as, owing to the settled condition, transportation facilities, and comparative cheapness of labor and supplies, it is possible to mine deposits of lower grade than could be made profitable in localities having less advantages of position. The result is that there are, besides a few large incorporated companies, a great many mining properties worked on the small scale, but still profitably, by individual owners. The collection of accurate statistics regarding these smaller claims is a very tedious and also somewhat uncertain matter. Schedule returns were received from 128 deep mines, 147 placer mines, 57 amalgamating mills, concentration and leaching works, 9 arrastras, and 4 smelting works in this State. These include most of the more important establishments, and are supplemented by general reports covering in some cases whole districts. But, with all the care taken by the census experts to thoroughly cover the ground, the subject was by no means exhausted, and in several cases in the accompanying tabulation resort has been had to information from outside sources.

California furnishes 71.47 per cent. of the total placer product of the United States, and 40.09 per cent. of the total gold product of the deep mines, or 51.38 per cent. of the total gold product of the country (from

all sources). The yield in silver, however, is only 2.80 per cent. of the total, California standing sixth in rank as a producer of the latter metal. In proportion to its area, again, California leads in production of gold, with an average of \$108.30 per square mile; is sixth in its silver yield of \$6.84 per square mile; and third as to its output of both metals, \$115.14 per square mile. As the population of the State has largely increased, while the mine production has remained nearly at a standstill for some years, the showing in relation to population is less favorable, the yield of gold being only \$19.84, silver, \$1.25, and that of both the precious metals only \$21.09 per capita, placing California fifth as to gold, and eighth as to silver and the total, in the rank of the States. The prosperity of the State is not, however, dependent upon its mines in the same degree as formerly, agriculture and manufacturing having outstripped the earlier industry.

TABLE I.—CALIFORNIA—*Production of deep mines for the year ending May 31, 1880.*

County	Ore raised during census year.	Average assay value per ton.			Total assay value of ore raised during census year.				
		Gold.	Silver.	Gold and silver.	Gold.		Silver.		Total.
		Tons.	Dolls.	Dolls.	Ounces.	Dollars.	Ounces.	Dollars.	Dollars.
Amador.....	114,618	14 62	.....	14 62	81,056.4	1,675,585	.....	.....	1,675,585
Calaveras.....	42,628	10 74	.....	10 74	22,162.1	458,131	.....	.....	458,131
El Dorado.....	4,520	26 76	.....	26 76	5,832.3	120,564	.....	.....	120,564
Fresno.....	578	150 00	13 00	163 00	4,194.1	86,700	5,812	7,514	94,214
Inyo.....	6,714	5 01	69 66	74 67	1,627.0	33,634	361,779	467,744	501,378
Lassen.....	2,079	21 08	63	21 71	*2,120.2	*43,828	*1,009	*1,305	*45,133
Los Angeles.....	200	.....	160 00	160 00	.....	.....	24,750	32,000	32,000
Mariposa.....	16,660	17 10	.....	17 10	13,783.0	284,920	.....	.....	284,920
Mono.....	57,211	51 95	10 59	62 54	143,772.9	2,972,053	468,826	606,145	3,578,198
Nevada.....	58,433	21 91	49	22 40	61,937.6	1,280,365	22,328	28,868	1,309,233
Placer.....	3,000	25 00	.....	25 00	3,628.1	75,000	.....	.....	75,000
Plumas.....	113,879	9 03	09	9 12	49,773.6	1,028,913	7,848	10,146	1,039,059
San Bernardino....	489	20 45	170 90	191 35	483.7	10,000	64,640	83,573	93,573
San Diego.....	16,513	22 36	.....	22 36	17,862.4	369,250	.....	.....	369,250
Shasta.....	8,010	*15 96	*13 48	*29 44	*6,182.3	*127,800	*83,533	*108,000	*235,800
Siskiyou.....	22,290	12 20	44	12 64	13,153.9	271,914	7,217	9,331	281,245
Trinity.....	800	*35 00	.....	*35 00	*1,354.5	*28,000	.....	.....	*28,000
Tuolumne.....	10,406	15 11	38	15 49	7,603.9	157,186	*3,094	*4,000	161,186
Total.....	479,028	18 84	2 84	21 68	436,528.0	9,023,843	1,050,836	1,358,626	10,382,469
Additional production, estimated from transportation statistics ...	*65,213	*18 84	*2 84	*21 68	59,434.1	*1,228,613	143,248	*185,205	*1,413,818
Grand total ...	544,241	18 84	2 84	21 68	495,962.1	10,252,456	1,194,084	1,543,831	11,796,287

TABLE I.—CALIFORNIA—*Production of deep mines, &c.*—Continued.

County.	Ore raised and treated.	Average yield per ton.			Bullion produced from ore raised and treated during census year.					
		Gold.	Silver.	Gold and silver.	Gold.		Silver.		Total.	
					Ounces.	Dollars.	Ounces.	Dollars.	Dollars.	
	Tons.	Dolls.	Dolls.	Dolls.						
Amador.....	108,136	12 49	.....	12 49	65,332.7	1,350,546	.....	.....	1,350,546	
Calaveras.....	40,503	8 58	.....	8 58	16,817.5	347,650	.....	.....	347,650	
El Dorado.....	4,520	21 21	.....	21 21	4,686.6	96,880	.....	.....	96,880	
Fresno.....	578	120 00	10 40	130 40	3,355.3	69,360	4,649	6,011	75,371	
Inyo.....	6,714	3 83	35 62	39 45	1,243.4	25,704	184,968	239,145	264,849	
Lassen.....	2,079	16 71	50	17 21	1,680.5	34,739	802	1,037	35,776	
Los Angeles.....	200	.....	147 00	147 00	.....	.....	22,740	29,400	29,400	
Mariposa.....	16,660	10 69	.....	10 69	9,096.9	188,050	.....	.....	188,050	
Mono.....	57,108	48 44	8 33	56 77	133,816.6	2,766,238	367,875	475,626	3,241,864	
Nevada.....	58,433	15 21	33	15 54	43,000.9	888,008	14,737	19,053	907,961	
Placer.....	3,000	20 00	.....	20 00	2,902.5	60,000	.....	.....	60,000	
Plumas.....	113,879	6 63	06	6 69	36,536.5	755,277	5,608	7,251	762,528	
San Bernardino.....	389	.....	164 55	164 55	.....	.....	49,540	64,050	64,050	
San Diego.....	16,513	14 40	.....	14 40	11,506.0	237,850	.....	.....	237,850	
Shasta.....	7,880	12 08	*11 34	22 42	4,605.3	95,200	*69,145	*89,397	184,597	
Siskiyou.....	22,290	9 11	31	9 42	9,830.0	203,204	5,273	6,818	210,022	
Trinity.....	800	27 50	.....	27 50	1,064.2	22,000	.....	.....	22,000	
Tuolumne.....	10,406	12 32	29	12 61	6,204.5	128,260	2,320	3,000	131,260	
Total.....	470,088	16 10	2 00	18 10	351,679.4	7,269,866	727,657	940,788	8,210,654	
Additional production, estimated from transportation statistics...	*65,213	*16 10	*2 00	*18 10	*50,790.1	*1,049,925	*100,879	*130,426	*1,180,351	
Grand total.....	535,301	16 10	2 00	18 10	402,469.5	8,319,791	828,536	1,071,214	9,391,005	

County.	Ore raised but not treated.	Assay value of ore raised during census year and remaining on hand at close of year.					Bullion produced during census year from ore previously raised.				
		Gold.		Silver.		Total.	Gold.		Silver.		Total.
		Tons.	Ozs.	Dollars.	Ozs.	Dolls.	Ounces.	Dollars.	Ozs.	Dollars.	Dollars.
Amador.....	6,482	1,251.5	25,870	.....	.....	25,870	2,733.2	56,500	.....	.....	56,500
Calaveras.....	2,125	1,312.1	27,125	.....	.....	27,125	48.4	1,000	.....	.....	1,000
Fresno.....	.....	.....	.....	.....	.....	.....	156.7	3,240	217	281	3,521
Mariposa.....	.....	.....	.....	.....	.....	.....	6,493.1	134,225	.....	.....	134,225
Mono.....	103	138.1	2,854	939	1,213	4,067	.....	.....	696	900	900
Placer.....	.....	.....	.....	.....	.....	.....	387.0	8,000	.....	.....	8,000
Plumas.....	.....	.....	.....	.....	.....	.....	2,152.6	44,498	21	27	44,525
San Bernardino.....	100	483.7	10,000	6,342	8,200	18,200	.....	.....	824	1,065	1,065
Shasta.....	130	628.9	13,000	.....	.....	13,000	58.1	1,200	6,914	8,939	10,139
Tuolumne.....	.....	.....	.....	.....	.....	.....	73.1	1,511	146	189	1,700
Total.....	8,940	3,814.3	78,849	7,281	9,413	88,262	12,102.2	250,174	8,818	11,401	261,575

* Estimated.

TABLE II.—CALIFORNIA—*Production of hydraulic, placer, drift, and river mines for the year ending May 31, 1880.*

County.	Gold.	
	Ounces.	Dollars.
Butte	15,730.3	325,175
Calaveras	4,665.8	96,450
Del Norte	6,208.0	128,331
El Dorado	*24,877.7	*514,269
Humboldt	3,724.9	77,000
Mono	1,219.0	25,200
Nevada	2,062.3	42,631
Placer	13,998.2	289,369
Plumas	7,946.0	164,259
Shasta	21,789.7	450,433
Siskiyou	23,413.1	483,991
Stanislaus	3,030.7	62,650
Trinity	37,635.7	778,000
Tuolumne	*27,081.7	*559,828
Yuba	*50,423.6	1,042,349
Total	243,806.7	5,039,935
Additional production, estimated from transportation statistics	*171,298.3	*3,541,054
Grand total	415,105.0	8,580,989

* Estimated.

NEVADA.

The production of this State shows a considerable decline, as compared with that of the preceding six years. This is not due to any general falling off in the prosperity of the mining industry of the State, but to the decrease in the yield of the leading source, the Comstock lode. From 1871 to 1879, Nevada had outranked all the other States and Territories in its output of the precious metals; but in the present census year it has fallen to the third place, having been passed by both Colorado and California. With the yield of the outside districts maintained at the existing rate of production, an important discovery of ore in the Comstock would perhaps raise Nevada again to the first rank. And even without any striking new developments, there is still a reserve of low-grade ore and tailings remaining unworked, sufficient to give a large and steady product for many years to come.

In 1876 the yield of the Comstock, according to Mr. Del Mar's careful analysis, was: gold, \$18,002,906; silver, \$20,570,078; total, \$38,572,984.

During the census year the product of the whole Comstock district, including the Virginia, Gold Hill, and Devil's Gate subdistricts, the outlying veins, such as the Occidental, etc., and the yield of tailings worked at various points throughout the entire tract known as the Washoe country, was: gold, \$3,109,156; silver, \$3,813,174; total, \$6,922,330. Showing a decline of \$31,650,654, or 82.06 per cent., since 1876.

The bullion product of Nevada represents an average of \$44.16 gold, \$112.29 silver, and \$156.45 gold and silver for each square mile of its area. In this respect Nevada is surpassed by Colorado, the figures for which are \$25.98 gold, \$159.22 silver, and \$185.20 total. But with ref-

erence to its population, Nevada, even with the reduced output, remains the richest of the mining States and Territories, as its annual product, if distributed equally per capita, would give \$78.51 gold, \$199.63 silver, and \$278.14 total to every man, woman, and child within its borders. Notwithstanding the large proportion of adult males, it will be seen that this would be a fair income for the actual working population. The Nevada mines, however, are largely owned outside the State, and although they have not, taken as a whole, been profitable during the year, the local disbursements in wages, etc., continue steadily, so that the inhabitants have a direct interest in the prosecution of work, independently of the question of ownership.

TABLE III.—NEVADA—*Production of deep mines for the year ending May 31, 1880.*

County.	Ore raised during census year.	Average assay value per ton.			Total assay value of ore raised during census year.				
		Gold.	Silver.	Gold and silver.	Gold.		Silver.		Total.
					Ounces.	Dollars.	Ounces.	Dollars.	
	Tons.	Dolls.	Dolls.	Dolls.	Ounces.	Dollars.	Ounces.	Dollars.	Dollars.
Elko	13, 221	11 71	122 82	134 53	7, 492. 0	154, 873	1, 255, 965	1, 623, 837	1, 778, 710
Esmeralda	29, 731	5 44	53 49	58 93	7, 825. 9	161, 776	1, 229, 931	1, 590, 178	1, 751, 954
Eureka	82, 013	19 23	38 84	58 07	76, 304. 5	1, 577, 356	2, 464, 082	3, 185, 812	4, 763, 168
Humboldt	11, 458	8 24	34 83	43 07	4, 566. 5	94, 397	308, 666	399, 074	493, 471
Lander	8, 166	.....	161 22	161 22	.....	.....	1, 018, 315	1, 316, 579	1, 316, 579
Lincoln	14, 399	1 31	54 81	56 12	910. 9	18, 829	610, 466	789, 271	808, 100
Nye	23, 817	1 33	30 75	32 08	1, 527. 6	31, 579	566, 431	732, 339	763, 918
Storey and Lyon ..	161, 700	21 75	26 47	48 22	170, 155. 1	3, 517, 422	3, 310, 015	4, 279, 519	7, 796, 941
White Pine	11, 547	53	61 00	61 53	294. 9	6, 096	544, 867	704, 459	710, 555
Total	356, 052½	15 62	41 06	56 68	269, 077. 4	5, 562, 328	11, 308, 738	14, 621, 068	20, 183, 396

County.	Ore raised and treated.	Average yield per ton.			Bullion produced from ore raised and treated during census year.				
		Gold.	Silver.	Gold and silver.	Gold.		Silver.		Total.
					Ounces.	Dollars.	Ounces.	Dollars.	
	Tons.	Dolls.	Dolls.	Dolls.	Ounces.	Dollars.	Ounces.	Dollars.	Dollars.
Elko	11, 721	9 31	99 27	108 58	5, 281. 4	109, 177	899, 928	1, 163, 517	1, 272, 694
Esmeralda	29, 361	4 45	44 88	49 33	6, 324. 3	130, 735	1, 019, 318	1, 317, 876	1, 448, 611
Eureka	79, 392	16 37	34 88	51 25	62, 893. 4	1, 300, 122	2, 141, 621	2, 768, 902	4, 069, 024
Humboldt	10, 644	6 14	28 49	34 63	3, 160. 7	65, 337	234, 562	303, 265	368, 602
Lander	7, 751	.....	143 19	143 19	.....	.....	858, 439	1, 109, 876	1, 109, 876
Lincoln	10, 398	22	48 78	49 00	111. 3	2, 301	392, 355	507, 276	509, 577
Nye	23, 817	1 11	26 16	27 27	1, 284. 0	26, 542	481, 883	623, 026	649, 568
Storey and Lyon ..	161, 700	16 31	19 85	36 16	127, 616. 4	2, 638, 067	2, 482, 512	3, 209, 639	5, 847, 706
White Pine	11, 547	42	50 83	51 25	235. 9	4, 877	453, 944	586, 905	591, 782
Total	346, 331	12 35	33 47	45 82	206, 907. 4	4, 277, 158	8, 964, 562	11, 590, 282	15, 867, 440

TABLE III.—NEVADA—*Production of deep mines, &c.*—Continued.

County.	Ore raised but not treated.	Assay value of ore raised during census year and remaining on hand at close of year.						Bullion produced during census year from ore previously raised.					
		Gold.		Silver.		Total.		Gold.		Silver.		Total.	
		Tons.	Ozs.	Dolls.	Ozs.	Dolls.	Dolls.	Ozs.	Dolls.	Ozs.	Dolls.	Dolls.	Dolls.
Elko	*1,500		*858.7	*17,750	*135,594	*175,310	*193,060						
Esmeralda ..	370		26.1	540	19,357	25,026	25,566			1,129	1,459		1,459
Eureka	2,621		1,789.9	37,000	62,689	81,050	118,050						
Humboldt....	814		505.5	10,450	14,502	18,750	29,200						
Lander	415				*76,108	*98,401	*98,401						
Lincoln	4,001		774.2	16,004	154,730	200,050	216,054						
Nye										6,932	8,962		8,962
Storey & Lyon								27,142.6	*561,089	551,886	*713,535	*1,274,624	
White Pine ..										89,721	116,000		116,000
Total		9,721	3,954.4	81,744	462,980	598,587	680,331	27,142.6	*561,089	649,668	*839,956	*1,401,045	

* Estimated.

PLACER MINES.—The placer yield of Nevada is insignificant. No important gravel deposits having suitable water supply are known to exist. The ground worked is in most cases merely the wash from the croppings of quartz veins. Operations are conducted on a small scale at Tuscarora, Tulé Cañon, points in the neighborhood of the Comstock, and in a few other isolated spots. The aggregate yield for the year is estimated roundly at \$50,000.

UTAH.

The bullion product of Utah is remarkably steady, varying latterly but little from year to year. This Territory presents facilities for arriving at a true valuation of the product which are wanting in many other mining localities. The mines are more concentrated, the yield coming from a comparatively few but rich claims, and the bulk of the ore is treated by a few large smelting works and mills, where accurate accounts are kept. It is therefore easier to collect full statistics of the product than in places where the bullion is derived from a vast number of sources, each one of which furnishes only a small quota, as is the case where placer mining forms an important factor. The census figures for Utah are also the more reliable from the fullness and clearness with which the schedules were prepared by the special expert for the Territory.

The tabulation of the product is based on returns from 535 deep mines, one placer mine, 18 amalgamating mills, 34 smelting works, and 10 miscellaneous metallurgical establishments, consisting of sampling, concentration, and leaching works. Many of these sources were, however, unproductive during the census year.

The following table shows the amount of ore raised in the several counties, with the bullion product, so far as traceable by counties. The table includes a statement of ore sold, with the price obtained for it. The larger part of the bullion here stated is from milling ores. The silver-lead ores sold to the smelters are in many cases transported for

reduction out of the district in which they were raised; and as their identity is lost in the mixture of ores from all portions of the Territory, and even from other States and Territories, it is impossible to segregate the bullion yield by districts.

TABLE IV.—UTAH—Production of deep mines for the year ending May 31, 1880.

County.	Ore raised during census year.	Average assay value per ton.			Total assay value of ore raised during census year.				
		Gold.	Silver.	Gold and silver.	Gold.		Silver.		Total.
		Tons.	Dolls.	Dolls.	Ozs.	Dolls.	Ozs.	Dolls.	Dolls.
Beaver	19,665.75	0 43	45 47	45 90	412.4	8,525	691,708	894,309	902,834
Juab	6,256	15 05	38 60	53 65	4,554.3	94,146	186,805	241,520	335,666
Piute	130	40 72	105 92	146 64	256.1	5,294	10,650	13,769	19,063
Salt Lake	52,506	3 09	20 39	23 48	7,865.7	162,598	827,991	1,070,510	1,233,108
Summit	16,918.33	.....	126 12	126 12	.....	.....	1,650,400	2,133,802	2,133,802
Tooele	7,319.20	.....	56 99	56 99	.....	.....	322,630	417,129	417,129
Utah	1,957.50	.....	31 59	31 59	.....	.....	47,828	61,837	61,837
Washington	49,895	.....	26 71	26 71	.....	.....	1,030,744	1,332,649	1,332,649
Scattered	*180	.....	*77 57	*77 57	.....	.....	*10,800	*13,963	*13,963
Total	154,827.78	1 75	39 91	41 66	13,088.5	270,563	4,779,556	6,179,488	6,450,051

County.	Ore raised and treated (in the same counties).	Average yield per ton.			Bullion produced from ore raised and treated during census year, as traced by counties.				
		Gold.	Silver.	Gold and silver.	Gold.		Silver.		Total.
		Tons.	Dolls.	Dolls.	Ozs.	Dolls.	Ozs.	Dolls.	Dolls.
Beaver	18,015.75	42	37 14	37 56	369.5	7,638	517,463	669,028	676,666
Juab	3,548	16 98	3 15	20 13	2,914	60,237	8,663	11,200	71,437
Salt Lake	12,000	9 69	53	10 22	5,627.4	116,329	4,880	6,310	122,639
Summit	12,508	.....	97 04	97 04	.....	.....	938,762	1,213,725	1,213,725
Tooele	250	.....	34 00	34 00	.....	.....	6,575	8,500	8,500
Washington	46,795	.....	21 66	21 66	.....	.....	784,065	1,013,718	1,013,718
Total (a)....	93,116.75	1 98	31 38	33 36	8,910.9	184,204	2,260,408	2,922,481	3,106,685

County.	Ore raised but not treated.	Assay value of ore raised during census year and remaining on hand at close of year.					Bullion produced during census year from ore previously raised.				
		Gold.		Silver.		Total.	Gold.		Silver.		Total.
		Tons.	Ozs.	Dolls.	Ozs.	Dolls.	Ozs.	Dolls.	Ozs.	Dolls.	Dolls.
Beaver	750	.....	.....	30,000	38,787	38,787	74.6	1,542	4,984	6,444	7,986
Juab	450	135.5	2,800	5,260	6,800	9,600	.....	.....	.....	.....	.....
Piute	50	.....	.....	1,547	2,000	2,000	.....	.....	.....	.....	.....
Salt Lake	2,650	29	600	26,500	34,262	34,862	.....	.....	.....	.....	.....
Summit	3,845	.....	.....	370,269	478,720	478,720	.....	.....	107,911	139,518	139,518
Tooele	1,200	.....	.....	12,839	16,660	16,600	.....	.....	.....	.....	.....
Utah	100	.....	.....	3,867	5,000	5,000	.....	.....	.....	.....	.....
Washington	3,100	.....	.....	57,227	73,989	73,989	.....	.....	.....	.....	.....
Total	12,145	164.5	3,400	507,509	656,158	659,558	74.6	1,542	112,895	145,962	147,504

* Estimated.

a Including only the product which could be segregated by counties. The balance, not thus traceable, is added in the summary for the United States, bringing the corresponding figures up to \$270,013 gold, \$4,596,957 silver, and \$4,866,970 total.

TABLE IV.—UTAH—*Production of deep mines, &c.*—Continued.

County.	Ore sold.	Cash receipts from ore sold. (Bullion accounted for in returns of smelting works.)	
		Av. price per ton.	Total receipts.
	Tons.	Dolls.	Dolls.
Beaver	900	8 00	7,200
Juab	2,258	45 11	102,860
Piute	80	98 06	7,845
Salt Lake	37,856	22 76	861,789
Summit	565.33	13 13	7,420
Do	300	40 00	a 12,000
Tooele	5,869.20	50 42	295,947
Utah	1,857.50	29 68	55,135
Scattered	*180	*60 00	*10,800
Total	49,866.03	27 29	1,360,996

*Estimated.

a For 300 tons concentrations.

The following is an exhibit of the proportionate amounts of ore milled and ore smelted:

TABLE V.—UTAH—*Statement of ore milled and smelted.*

County.	Ore milled.	Ore smelted.	Total ore treated.	Percentage of ore milled.	Percentage of ore smelted.
	Tons.	Tons.	Tons.		
Beaver		18,915.75	18,915.75		100
Juab	3,548	2,258.00	5,806.00	61	39
Piute		80.00	80.00		100
Salt Lake	12,000	37,856.00	49,856.00	24	76
Summit	12,508	565.33	13,073.33	96	4
Tooele	250	5,869.20	6,119.20	4	96
Utah		1,857.50	1,857.50		100
Washington	46,795		46,795.00	100	
Scattered		180.00	180.00		100
Total	75,101	67,581.78	142,682.78	53	47

The most noticeable feature shown in the foregoing table is the large proportion of milling ore which Utah furnishes, compared with her base ores, although a Territory generally supposed to be dependent upon her smelting works. It should be noted, also, that of the ore smelted there was a considerable amount which might have been treated by amalgamation, but which, because of the absence of proper milling facilities, or because of unusual richness, it was advisable to sell to the smelters. But while the percentage by weight of ore milled was 53 per cent., as against 47 per cent. for ores smelted, the same proportion does not hold with regard to value, the percentage of bullion extracted being only 51.08 per cent. for the product of amalgamating mills as against 48.92

per cent. for that from smelting works—a nearly even ratio. This difference is accounted for by the fact that, as a rule, the ores smelted, on account of the greater expense usually involved, are richer than the ores which will bear the milling expense; and also because of the higher proportion of the assay contents of the ore extracted by the smelting process, as compared with the milling results. The following analysis of the total bullion product of the Territory shows the relative amounts coming from each source:

TABLE VI.—UTAH—*Analysis of product.*

Classification of source.	Gold.	Silver.	Total.
Amalgamating mills, from ore raised during census year.	\$175, 024	\$2, 247 009	\$2, 422, 033
Amalgamating mills, from ore raised prior to census year.		139, 518	139, 518
Total from mills	175, 024	2, 386, 527	2, 561, 551
Smelting-works, from ore raised during census year	94, 989	2, 349, 948	2, 444, 937
Smelting-works, from ore raised prior to census year	1, 542	6, 444	7, 986
Total from smelting-works	96, 531	2, 356, 392	2, 452, 923
Total from mills and smelting-works	271, 555	4, 742, 919	5, 014, 474
Placer mines	20, 000		20, 000
Total	291, 555	4, 742, 919	5, 034, 474

The average product of the Utah milling ores and ores smelted, and the average yield of all the Utah ore reduced by either process during the census year, was as follows:

TABLE VII.—UTAH—*Comparative results of treatment.*

	Average yield of—		
	Ores milled.	Ores smelted.	All ore treated.
Gold, per ton	\$2 33	\$1 40	\$1 90
Silver, per ton	29 02	34 78	33 24
Total	32 25	36 18	35 14

The next table shows the base bullion product of the Utah smelting works, with the precious metal contents. It includes the yield of ores sent from Idaho, Montana, and Nevada to the Utah smelters, and also the product of a small quantity of ore which was raised prior to the census year.

Deducting from the crude bullion product 322,170 pounds, produced from Idaho, Montana, and Nevada ores smelted in Utah, the remainder, 27,891,331 pounds, is the yield of Utah ores smelted in the Territory. To this should be added 865,500 pounds of crude lead bullion, the estimated yield of Utah ores smelted in Chicago and Omaha. The total crude bullion product of Utah for the census year is, therefore, 28,756,831 pounds.

TABLE VIII.—UTAH—*Base bullion production of smelting works for the year ending May 31, 1880.*

County.	Refined lead.	Crude bullion, including weight of silver and gold contents.	Precious metals contained in base bullion.				
			Gold.		Silver.		Total.
	Pounds.	Pounds.	Ounces.	Dollars.	Ounces.	Dollars.	Dollars.
Beaver		8,312,957	444.1	9,180	522,447	675,472	684,652
Salt Lake	2,586,370	16,781,778	3,731.4	77,135	1,159,583	1,499,225	1,576,360
Tooele		3,118,766	335.9	6,944	131,876	170,502	177,446
Total	2,586,370	28,213,501	4,511.4	93,259	1,813,906	2,345,199	2,438,458

The gross precious metal product of the Utah smelting works, given in the preceding table, is segregated as follows:

TABLE IX.—UTAH—*Product of ores smelted in Utah during the year ending May 31, 1880.*

	Bullion.				
	Gold.		Silver.		Total.
	Ounces.	Dollars.	Ounces.	Dollars.	Dollars.
Product of smelting works (precious metals contained in base bullion)	4,511.4	93,259	1,813,906	2,345,199	2,438,458
Deduct product of Beaver County smelting works (accounted for in Table IV)	444.1	9,180	522,447	675,472	684,652
Product of smelting works, less product of Beaver County smelting works	4,067.3	84,079	1,291,459	1,669,727	1,753,806
From this deduct:	Ounces. Dollars.				
Product of Nevada ores smelted in Utah (a)	14,994	19,386			
Product of Idaho ores smelted in Utah (b)	16,916	21,870			
Product of Montana ores smelted in Utah (c)	5,116	6,615			
Product of Nevada sulphides of leaching works	15,469	20,000			
Total	52,495	67,871	52,495	67,871	67,871
Net product of Utah ores smelted in Utah, less product of Beaver County smelting works	4,067.3	84,079	1,238,964	1,601,856	1,685,935

(a) 359 tons containing 25 per cent. lead. Estimated product, 80.775 tons lead.
 (b) 162 tons containing 45 per cent. lead. Estimated product, 65.61 tons lead.
 (c) 49 tons containing 30 per cent. lead. Estimated product, 14.7 tons lead.

In addition to the bullion product from ores which were treated in the Territory, there was also a considerable yield from ore and matte shipped to Chicago and Omaha and reduced at these points. As nearly as ascertainable this additional product was:

TABLE X.—UTAH—Bullion produced from Utah ores and matte treated elsewhere than in the Territory.

Ore and matte shipped to Chicago and Omaha.	Assay value.					Estimated product, to be included in total production of Utah.				
	Gold.		Silver.		Total.	Gold.		Silver.		Total.
	Tons.	Ounces.	Dollars.	Ounces.	Dollars.	Dollars.	Ounces.	Dollars.	Ounces.	Dollars.
1,180	93	1,922	49,689	64,243	66,165	83.7	1,730	44,720	57,819	59,549
241			12,050	15,579	15,579			11,448	14,801	14,801
1,421	93	1,922	61,739	79,822	81,744	83.7	1,730	56,168	72,620	74,350

From the preceding tables the following *résumé* is derived :

TABLE XI.—UTAH—Résumé.

Classification of product.	Bullion.				
	Gold.		Silver.		Total.
	Ounces.	Dollars.	Ounces.	Dollars.	Dollars.
Bullion product traceable by districts from Utah ore raised during census year	8,910.9	184,104	2,260,408	2,922,481	3,106,685
Bullion product traceable by districts from Utah ore raised prior to census year	74.6	1,542	212,895	145,962	147,504
Net bullion product from Utah ores sold to and treated by Utah smelting works during census year	4,067.3	84,079	1,238,964	1,601,856	1,685,935
Estimated bullion product of ores and matte shipped to Chicago and Omaha during census year	83.7	1,730	56,168	72,620	74,350
Product of placer mines (of West Mountain district, Salt Lake County) during census year	967.5	20,000			20,000
Total	14,104.0	291,555	3,668,435	4,742,919	5,034,474

UTAH PLACER GOLD.—The small placer product of the territory (\$20,000 in the census year) was from West Mountain district, in Salt Lake County.

MARKET VALUE OF UTAH BASE BULLION.—The gold and silver contents of the base bullion are sold at a price which allows for the refining charge on each metal, with, of course, the market discount on the silver. Thus the gold contents brought from \$19 to \$20 per ounce, and the silver an average of \$1.10 per ounce during the census year.

The average price of refined lead at Salt Lake City during the same period was 4¾ cents per pound, and that of unrefined lead \$47.50 per ton.

Market value of 2,586,370 pounds refined lead	\$122,853
Market value of 28,756,831 pounds unrefined lead	682,975
Total	805,828

This represents roughly the value at the seaboard after deducting freight charges, commissions, etc. There were also \$14,160 worth of copper sold, the product of Utah ores worked for the extraction of the precious metals. Adding the market value of the lead and copper, all of it an accessory product of the precious-metal industries, to the mint

value of the precious metals, the total product of the Utah mines is raised to \$5,854,462. This does not include the value of iron ore sold for flux, and some other small items.

ARIZONA.

A marked impulse has been given to the mining industry of Arizona by the fine showing of the new Tombstone district, in Pima County. The bullion production of this district had only begun in the period covered by the census year. A few months later, with increased milling facilities, a considerably higher rate of production was maintained.

The accompanying tables contain a probable error of at least 20 per cent., owing to the fact that no schedule data were available for estimating the production from the following sources: Various districts in Apache County. In Maricopa County, the Vulture mine (a large producer) and Myers district. In Mohave County, Aubrey, Hope, and San Francisco districts. In Pima County, Aztec, De Frees, Huachuca, Patagonia, Santa Catarina, and Tyndall districts; also several important mines in Tombstone district. In Pinal County, Mineral, Pinal, Randolph, and Summit districts; also the Silver King mine in Pioneer district and the Silver Era mine in Globe district. In Yavapai County, Agua Fria, Greenwood, Hassayampa, Lynx Creek, Martinez, Pine Grove, and Turkey Creek districts. In Yuma County, Bill Williams' Fork, Eureka, Harecuar, La Paz, Montezuma, and Weaver districts. The estimates given for the production from the sources mentioned as not included in the schedule data furnished by the experts accordingly have a wide margin of uncertainty in comparison with the statements of the yield of localities from which fuller information was received.

TABLE XII.—ARIZONA—Production of deep mines for the year ending May 31, 1880.

County.	Ore raised during census year.	Average assay value per ton.			Total assay value of ore raised during census year.				
		Gold.	Silver.	Gold and silver.	Gold.		Silver.		Total.
					Ounces.	Dolls.	Ounces.	Dollars.	
	Tons.	Dolls.	Dolls.	Dolls.	Ounces.	Dolls.	Ounces.	Dollars.	Dollars.
Maricopa.....	1,989.00	1 51	114 43	115 94	145.1	3,000	176,039	227,600	230,600
Mohave.....	2,618.50	10 79	84 30	95 09	1,367.1	28,260	170,729	220,736	248,996
Pima.....	25,338.00	9 74	76 82	86 56	11,941.4	246,850	1,505,428	1,946,368	2,193,218
Pinal.....	1,201.00	21 33	31 60	82 93	1,239.3	25,620	29,352	37,950	63,570
Yavapai.....	6,600.00	4 41	123 70	128 11	*1,408.9	*29,125	631,487	816,450	845,575
Yuma.....	1,930.00	3 56	35 49	39 05	332.6	6,875	52,973	68,488	75,363
Total, as derived from schedule data.....	39,676.50	8 56	83 61	92 17	16,434.4	339,730	2,566,008	3,317,592	3,657,322
Additional production, estimated.....	*8,576.00	*9 30	*114 99	*124 34	*3,877.9	*80,163	*762,745	*986,153	*1,066,316
Total production, estimated.....	*48,252.50	*8 70	*89 19	*97 89	*20,312.3	*419,893	*3,328,753	*4,303,745	*4,723,638

* Estimated.

TABLE XII.—ARIZONA—*Production of deep mines, &c.*—Continued.

County.	Ore raised and treated.	Average yield per ton.			Bullion produced from ore raised and treated during census year.				
		Gold.	Silver.	Gold and silver.	Gold.		Silver.		Total.
		Tons.	Dolls.	Dolls.	Ounces.	Dolls.	Ounces.	Dollars.	Dollars.
Maricopa	264.00			376 44			76,866	99,381	99,381
Mohave	893.00	10 36	114 49	124 85	447.5	9,250	79,084	102,248	111,498
Pima	12,448.50	9 74	76 82	86 56	4,580.2	96,748	623,499	806,122	902,870
Pinal	119.75	21 09	40 33	61 42	122.2	2,526	3,735	4,829	7,355
Yavapai	3,223.00	3 32	144 79	148 11	517.6	10,700	360,933	466,650	477,350
Yuma	204.00	5 00		5 00	49.3	1,020			1,020
Total, as derived from schedule data	17,152.25	7 01	86 24	93 25	5,816.8	120,244	1,144,117	1,479,230	1,599,474
Additional production, estimated	*8,576.00	*7 01	*86 24	*93 25	*2,908.4	*60,122	*572,059	*739,615	*799,737
Total production, estimated	*25,728.25	*7 01	*86 24	*93 25	*8,725.2	*180,366	*1,716,176	*2,218,845	*2,399,211

* Estimated.

PLACER MINES.—The schedule data include 798.2 ounces, or \$16,500, of gold from the Arizona placers, to which are added 653 ounces, or \$13,500, by estimate, bringing the total product from this source up to 1,451.2 ounces, or \$30,000. This was chiefly derived from Yavapai County.

IDAHO.

The tabulation of the output of this Territory is based upon reports of the examining expert on 369 deep mines, 14 placer mines, 18 amalgamating mills, 2 arrastras, and 2 smelting works, besides several general reports on whole districts.

From 1876 up to the close of the census year, the product of this Territory has been mainly dependent upon the older mining districts, of which the placer mines of Boise Basin have contributed a large proportion. The panic in the stock market of San Francisco in 1876 led to a suspension of operations in the principal Owyhee mines, which for some years previous to that period had yielded large returns. This crash was due quite as much to mismanagement of the mines themselves as to causes inherent in the speculative market; but whatever the reason, the result was the closing down of many mines which probably would have been still largely productive if properly worked. As the case now stands, the Owyhee district, which formerly yielded by far the greater part of the total output of the Territory, at present furnishes only about one-fifth of the aggregate. It is to be hoped that at no distant time in the future this district may again appear as a large producing center.

Had these statistics been collected for a year ending only a few months later, the new Wood River country would have added largely to

the total product. Operations in this district were only seriously begun toward the close of May, 1880; hence the large product from ores shipped to Salt Lake during the fall of the same year does not enter into the tabulation for the census year.

In addition to the developments in the Wood River country, a number of other new localities appear as future important productive sources, prominent among which is the Sawtooth district, which from the absence of local milling facilities was at a standstill pending the erection of reduction works. Another year will witness a considerable bullion production from the mines of this district. The same remark holds good with regard to Smiley's cañon, from which a small amount of ore was shipped at great expense to distant points for reduction. The returns from these shipments were such as to give great hope for a large increase when it becomes possible to treat the ores at greater advantage in mills placed near the mines.

In the Yankee Fork region a decided impulse—the effect of which was not shown until the opening of the season of 1881—was given by the erection of the fine and well-appointed mill of the Custer Company. Previous to the building of this mill the ores of the district had either to be worked in arrastras, with a large percentage of loss, or be freighted at a heavy charge to Salt Lake, or elsewhere, for treatment. In spite of these disadvantages two mines were shipping considerable amounts of \$900 ore, while a third was developing an immense body of ore which was expected to yield \$300 per ton.

The smelting works recently constructed at Bay Horse and Kinnikinnick will also add largely to the total product.

The period covered by the census year, while one of great promise for the future of the territory, nevertheless showed a comparatively small yield. The probabilities are that within two years the output of Idaho will at least have doubled.

The deposits of Idaho bullion (so far as it is possible to segregate them, a very large portion having passed through private refineries and thus losing their identity) up to the close of the fiscal year ending June 30, 1880, are stated by the Director of the Mint to have been \$24,137,417 gold, \$727,296 silver, and \$24,864,713 total. This amount is far less than the actual output up to that date, vague unofficial estimates placing the total yield as high as \$60,000,000.

Of the gold product for the census year, 59.42 per cent. is from placers, and 40.58 per cent. from the deep mines. Idaho furnishes 7.32 per cent. of the placer output of the United States, 2.81 per cent. of the deep mine gold, and 4.43 per cent. of the total gold; 1.13 per cent. of the silver, and 2.60 per cent. of the entire product of the precious metals in the whole country. As a gold-producer the territory ranks sixth, and in silver, seventh. The average yield per square mile is \$17.45 gold, \$5.30 silver, and \$22.75 total. In this respect Idaho stands fifth in point of gold, seventh in silver, and sixth in developed richness in gold and sil-

ver. The average yield per capita is \$45.38 gold, \$13.78 silver, and \$59.16 in both precious metals, placing the rank as regards product in reference to population third as to gold, sixth as to silver, and fifth altogether. The comparison with regard to population is probably the most reliable test of the relative prosperity of a mining region.

TABLE XIII.—IDAHO—*Production of deep mines for the year ending May 31, 1880.*

County.	Ore raised during census year.	Average assay value per ton.			Total assay value of ore raised during census year.				
		Gold.	Silver.	Gold and silver.	Gold.		Silver.		Total.
		Tons.	Dollars.	Dollars.	Ounces.	Dollars.	Ounces.	Dollars.	Dollars.
Alturas	4,077.75	36 43	46 12	82 55	7,185.4	148,536	145,477	188,088	336,624
Boise	16,605	16 92	6 51	23 43	13,594.3	281,020	83,684	108,195	389,215
Idaho	*500	*25 00	.....	*25 00	*604.7	*12,500	.....	.....	*12,500
Lemhi	5,000	60 00	60 00	120 00	14,512.5	300,000	232,036	300,000	600,000
Nez Percés	300	20 00	.....	20 00	290.3	6,000	.....	.....	6,000
Oneida	500	25 00	.....	25 00	604.7	12,500	.....	.....	12,500
Owyhee	8,342.75	32 35	33 81	66 16	13,057.7	269,927	218,190	282,097	552,024
Washington	500	15 00	.....	15 00	362.8	7,500	.....	.....	7,500
Total	35,825.50	28 97	24 52	53 49	50,212.4	1,037,983	679,387	878,380	1,916,363

County.	Ore raised and treated.	Average yield per ton.			Bullion produced from ore raised and treated during census year.				
		Gold.	Silver.	Gold and silver.	Gold.		Silver.		Total.
		Tons.	Dollars.	Dollars.	Ounces.	Dollars.	Ounces.	Dollars.	Dollars.
Alturas	908	53 13	65 45	118 58	2,333.7	48,242	45,971	59,436	107,678
Boise	15,645	13 44	5 39	18 83	10,169.9	210,231	65,330	84,465	294,696
Idaho	*500	*20 00	.....	*20 00	*483.7	*10,000	.....	.....	*10,000
Lemhi	2,500	50 00	50 00	100 00	6,046.9	125,000	96,683	125,000	250,000
Nez Percés	*300	*15 00	.....	*15 00	*217.7	*4,500	.....	.....	*4,500
Oneida	500	20 00	.....	20 00	483.7	10,000	.....	.....	10,000
Owyhee	7,176.75	25 09	24 68	49 77	8,712.4	180,101	136,985	177,109	357,210
Washington	500	10 00	.....	10 00	241.9	5,000	.....	.....	5,000
Total	28,029.75	21 16	15 91	37 07	28,689.9	593,074	344,969	446,010	1,039,084

County.	Ore raised but not treated.	Assay value of ore raised during census year and remaining on hand at close of year.					Bullion produced during census year from ore previously raised.				
		Gold.		Silver.		Total.	Gold.		Silver.		Total.
		Tons.	Ounces.	Dollars.	Ounces.	Dollars.	Ozs.	Dolls.	Ozs.	Dolls.	Dolls.
Alturas	3,169.75	4,396.7	90,857	95,653	123,670	214,557	169.3	3,500	2,707	3,500	7,000
Boise	960.00	1,867.0	38,595	13,388	17,310	55,905	166.2	3,436	.....	.....	3,436
Lemhi	2,500.00	7,256.2	150,000	116,018	150,000	300,000	.....	.....	.....	.....	.....
Owyhee	1,166.00	2,891.7	59,776	58,563	75,715	135,491	.....	.....	.....	.....	.....
Total	7,795.75	16,411.6	339,258	283,622	366,695	705,953	335.5	6,936	2,707	3,500	10,436

* Estimated.

TABLE XIV.—IDAHO—*Production of placer mines for the year ending May 31, 1880.*

County.	Gold.	
	Ounces.	Dollars.
Ada	241.9	5,000
Alturas	1,693.1	35,000
Boise	30,120.4	622,645
Cassia	967.5	20,000
Idaho	2,902.5	60,000
Lemhi	967.5	20,000
Nez Percés	483.8	10,000
Oneida	1,451.2	30,000
Owyhee	2,515.5	52,000
Shoshone	483.8	10,000
Washington	725.6	15,000
Total	42,552.8	879,645

OREGON.

Oregon is one of the oldest of the western mining States, the discovery of gold within its limits having followed closely upon that in California. Its output has never been very large in comparison with the yield of its neighbor State, but although the mines have become secondary to its agricultural resources in point of importance, they still furnish occupation and profit to many of its inhabitants. The quartz veins of Baker County, in the eastern portion of the State, adjoining Idaho Territory, continue to yield the larger portion of the total deep-mine product of this State. The prevailing type of the Oregon ores is a free gold quartz, though rebellious gold ores, requiring special treatment, are found in some localities, and a small amount of silver is produced in Grant County.

The latter county takes the lead in surface mining, while Baker, Jackson, and Josephine Counties are also productive of a considerable amount of placer gold.

Oregon now ranks seventh on the roll of the mining States in production of gold, eleventh in output of silver, and ninth in its yield of both metals. Its quota toward the total production of the United States is 7.75 per cent. of the placer gold, .80 per cent. of the deep-mine gold, 3.29 per cent. of the total gold, and only .07 per cent. of the total silver. The percentage of the total combined gold and silver product is 1.49 per cent. The average yield per square mile is \$11.43 gold, \$0.20 silver, and \$11.63 total. The product per capita is \$6.28 gold, \$0.11 silver, and \$6.39 total, giving Oregon a rank of seventh in gold, tenth in silver, and ninth in total bullion output, in point of production as relative to population. The small proportion per capita shows how completely mining has been overshadowed by other industries in this State.

TABLE XV.—OREGON—*Production of deep mines for the year ending May 31, 1880.*

County.	Ore raised during census year.	Average assay value per ton.			Total assay value of ore raised during census year.				
		Gold.	Silver.	Gold and silver.	Gold.		Silver.		Total.
		Tons.	Dollars.	Dollars.	Ounces.	Dollars.	Ounces.	Dollars.	Dollars.
Baker	12,737	11 00	1 59	12 59	6,776.9	140,091	15,713	20,316	160,407
Grant	1,200	76 87	45 88	122 75	4,462.1	92,240	4,579	55,050	147,290
Josephine	150	*34 83	.....	*34 83	*252.7	*5,225	.....	.....	*5,225
Total	14,087	16 86	5 35	22 21	11,491.7	237,556	58,292	75,366	312,922

County.	Ore raised and treated.	Average yield per ton.			Bullion produced from ore raised and treated during census year.				
		Gold.	Silver.	Gold and silver.	Gold.		Silver.		Total.
		Tons.	Dollars.	Dollars.	Ounces.	Dollars.	Ounces.	Dollars.	Dollars.
Baker	12,607	7 80	34	8 14	4,755.5	98,305	3,331	4,307	102,612
Grant	1,015	67 21	13 43	80 64	3,300.2	68,221	10,549	13,639	81,860
Josephine	150	31 66	.....	31 66	229.8	4,750	.....	.....	4,750
Total	13,772	12 44	1 30	13 74	8,285.5	171,276	13,880	17,946	189,222

County.	Ore raised but not treated.	Assay value of ore raised during census year and remaining on hand at close of year.					Bullion produced during census year from ore previously raised.				
		Gold.		Silver.		Total.	Gold.		Silver.		Total.
		Tons.	Ounces.	Dollars.	Ounces.	Dollars.	Ozs.	Dolls.	Ounces.	Dollars.	Dollars.
Baker	130	188.7	3,900	3,017	3,900	7,800	4.3	88	1,285	1,661	1,749
Grant	185	894.9	18,500	28,617	37,000	55,500	.....	.....	.....	.....	.....
Total	315	1,083.6	22,400	31,634	40,900	63,300	4.3	88	1,285	1,661	1,749

* Estimated.

TABLE XVI.—OREGON—*Production of placer mines for the year ending May 31, 1880.*

County.	Gold.	
	Ounces.	Dollars.
Baker	7,262.8	150,136
Coos	3.6	75
Curry	453.5	9,375
Douglas	620.5	12,826
Grant	14,096.5	291,400
Jackson	9,132.7	188,790
Josephine	9,503.4	196,454
Umatilla	3,680.4	76,080
Wasco	58.1	1,200
Total	44,811.5	926,336

WASHINGTON.

Of the small product reported from the deep mines of Washington Territory, nearly the whole comes from Peshaston district, in Yakima County, where gold quartz mining is conducted on a small scale.

The Upper Columbia placers furnish over one-half of the total placer yield of the Territory. The Skagit mines, in Whatcom County, about which, from time to time, reports glittering with golden promise have been spread, are not yet to be numbered among the important productive deposits of the country. They have attracted much attention from the press, and have been the scene of several incipient "rushes," but the shortness of the season, inaccessibility, and other natural disadvantages have combined to retard operations, and the yield is still very scanty.

TABLE XVII.—WASHINGTON—*Production of deep mines for the year ending May 31, 1880.*

County.	Ore raised during census year.	Average assay value per ton.			Total assay value of ore raised during census year.				
		Gold.	Silver.	Gold and silver.	Gold.		Silver.		Total.
		Tons.	Dollars.	Dollars.	Ounces.	Dollars.	Ounces.	Dollars.	Dollars.
Yakima	437	*41 85	Trace.	*41 85	*884.6	*18,287			*18,287
Scattered	100	37 50	Trace.	37 50	181.4	3,750			3,750
Total	537	41 04	Trace.	41 04	1,066.0	22,037			22,037

County.	Ore raised and treated.	Average yield per ton.			Bullion produced from ore raised and treated during census year.				
		Gold.	Silver.	Gold and silver.	Gold.		Silver.		Total.
		Tons.	Dollars.	Dollars.	Ounces.	Dollars.	Ounces.	Dollars.	Dollars.
Yakima	437	31 59	Trace.	31 59	667.6	13,800			13,800
Scattered	100	30 00	Trace.	30 00	145.1	3,000			3,000
Total	537	31 28	Trace.	31 28	812.7	16,800			16,800

* Estimated.

TABLE XVIII.—WASHINGTON—*Production of placer mines for the year ending May 31, 1880.*

Locality.	Gold.	
	Ounces.	Dollars.
Whatcom County, Skagit mines	193.5	4,000
Yakima County, Swauk mines	483.7	10,000
Upper Columbia placers	2,902.5	60,000
All other placers	2,176.9	45,000
Total	5,756.6	119,000

ALASKA.

This vast territory, occupying an area of over half a million square miles, is for the most part still an unexplored region. The small amount of prospecting which has been done has developed the fact that Alaska contains many gold-bearing localities, none of which, however, have yet yielded any considerable output. The climate and remoteness from communications will always be obstacles in the way of mining, but in spite of the natural disadvantages of the country, it is reasonable to look for an increased product in the future. Recent reports, much exaggerated, of fabulous discoveries of mountains of silver ore have attracted many adventurous miners to Alaska. Thus far only disappointment has resulted. The Takou gold district, which has been explored to some extent, is, however, stated to have yielded \$150,000 in the season of 1881.

The small amount of placer gold received at the San Francisco mint from Alaska during the census year, \$5,951, does not perhaps represent the whole product for that period, as a portion may have found its way to Victoria, and thus have become identified with the product of British Columbia. No means of tracing this small possible balance are at hand. The total was in any event insignificant.

STATISTICS OF THE DIVISION OF THE ROCKY MOUNTAINS.

[Collected and compiled under the direction of Mr. S. F. Emmons, geologist-in-charge and special agent of census.]

COLORADO.

From an average annual production of only three or four millions, Colorado has suddenly risen to the first rank as a producer of the precious metals among the States and Territories for gold and silver combined, as well as for silver alone, while for gold it holds the fourth rank. In the relation of production to area it holds the first rank likewise for gold and silver combined and for silver alone, and the third for gold alone. In the relation of production to population, however, it ranks only third for gold and silver together, second for silver alone, and sixth for gold alone. The total value of its product during the census year in gold and silver was, in round numbers, nineteen and a quarter million dollars, and, if we add to this the value of lead and copper in crude metal produced, we have a total value of metallic product of twenty-two and three-quarters million dollars.

The collection of statistics of the precious metals in this State presents certain peculiar difficulties. First, from the fact that there are so many small mines which keep no accurate record of their production; second, because a very large proportion of its ores, being essentially

heterogeneous in composition, have to be smelted, and are thus more difficult to trace than milling ores. The smelting ores are sold, it is true, mostly to smelters within the State, but the same mine often sells to different and widely-separated works, and the smelters themselves buy ores in small lots from many mines, of which no separate record is kept. Moreover, the check furnished in the more western States over the total production by the express returns is here wanting, since practically the whole silver product is shipped east in lead bullion, of which the transportation companies keep no record. Nevertheless, owing to the almost uniform willingness which the more important mine-owners, samplers, and smelters have shown to afford the data which they possessed, it is believed that the totals attained represent a very close approximation to the actual product of the State, and that the figures given are, on the average, within 5 per cent. of the true amount, although in districts as yet incompletely developed this percentage may be greater.

TABLE XIX.—COLORADO—*Production of deep mines for the year ending May 31, 1880.*

County.	Ore raised during census year.	Average assay value per ton.			Total assay value of ore raised during census year.				
		Gold.	Silver.	Gold and silver.	Gold.		Silver.		Total.
		Tons.	Dolls.	Dolls.	Ounces.	Dollars.	Ounces.	Dollars.	Dollars.
Boulder	7,868	58 17	49 46	107 63	22,137.0	457,613	301,025	389,195	846,808
Chaffee	979	20 58	171 64	192 22	975.0	20,155	129,965	168,032	188,187
Clear Creek	37,031	10 15	52 79	62 94	18,191.0	376,041	1,511,754	1,954,547	2,330,588
Custer	16,094	91	37 17	38 08	706.0	14,594	462,721	598,252	612,846
Gilpin	123,668	16 27	5 46	21 73	97,337.0	2,012,134	521,871	674,727	2,686,861
Gunnison	252	36 03	721 03	757 06	439.2	9,079	140,537	181,700	190,779
Hinsdale	2,695	3 07	69 45	72 52	400.0	8,269	144,762	187,163	195,432
Huerfano	35	20 69	96 97	117 66	35.0	724	2,625	3,394	4,118
Lake	152,451	54	90 04	90 58	4,000.0	82,687	10,617,216	13,726,998	13,809,685
La Plata	12	10 00	246 75	256 75	5.8	120	2,290	2,961	3,081
Ouray	1,790	41 41	154 81	196 22	3,585.5	74,119	214,327	277,103	351,222
Park	5,364	1 36	146 21	147 57	352.7	7,291	606,585	784,254	791,545
Rio Grande	550	15 50	.....	15 50	412.5	8,527	.....	.....	8,527
San Juan	2,725	73	121 39	122 12	96.5	1,995	255,847	330,785	332,780
Summit	4,846	3 73	85 88	89 61	875.0	18,088	321,889	416,170	434,258
Total	356,360	8 68	55 26	63 94	149,548.2	3,091,436	15,233,414	19,695,281	22,786,717

TABLE XIX.—COLORADO—Production of deep mines, &c.—Continued.

County.	Ore raised and treated.	Average yield per ton.			Bullion produced from ore raised and treated during census year.				
		Gold.	Silver.	Gold and silver.	Gold.		Silver.		Total.
		Tons.	Dolls.	Dolls.	Ounces.	Dollars.	Ounces.	Dollars.	Dollars.
Boulder	7,558.0	40 28	46 82	87 10	14,728.3	304,461	273,688	353,851	658,312
Chaffee	161.0	6 33	46 65	52 98	*49.3	*1,019	*5,809	*7,510	*8,529
Clear Creek	†35,821.0	6 11	46 73	52 84	*10,582.3	*218,756	*1,294,774	*1,674,013	*1,892,769
Custer	†6,784.0	2 12	10 66	12 78	696.2	14,392	55,927	72,308	86,700
Gilpin	123,645.0	13 08	2 61	15 69	*78,263.4	*1,617,848	*270,074	*323,321	*1,941,169
Gunnison	252.0	18 11	100 00	118 11	*220.3	*4,554	19,507	25,221	29,775
Hinsdale	2,695.0	2 61	13 09	15 70	277.8	5,743	99,958	129,236	134,979
Huerfano	5.5	.....	57 27	57 27	.....	.....	244	315	315
Lake §	140,623.0	5 58	89 34	89 92	3,913.7	80,904	9,717,819	12,564,168	12,645,072
La Plata	12.0	8 58	226 00	234 58	5.0	103	2,098	2,712	2,815
Ouray	1,311.0	12 69	78 55	91 24	*804.5	*16,631	*79,651	*102,981	*119,612
Park	5,364.0	18	95 67	95 85	*46.0	*951	*396,921	*513,179	*514,130
Rio Grande	550.0	9 79	.....	9 79	260.5	5,385	.....	.....	5,385
San Juan	1,353.0	1 29	104 31	105 60	84.0	*1,736	*109,166	*141,141	*142,877
Summit	4,446.0	1 16	79 66	80 82	250.0	*5,168	*273,915	*354,145	*359,313
Total	330,580.5	6 89	49 20	56 09	110,181.3	2,277,651	12,579,551	16,264,101	18,541,752

County.	Ore raised but not treated.	Assay value of ore raised during census year and remaining on hand at close of year.				Bullion produced during census year from ore previously raised.				
		Gold.		Silver.		Total.	Gold.		Silver.	
		Tons.	Ozs.	Dolls.	Ounces.	Dollars.	Ozs.	Dolls.	Ozs.	Dolls.
Boulder	310.0	1,423.0	29,416	21,470	27,759	57,175	.....	.....	9,487	12,266
Chaffee	818.0	708.4	14,644	107,706	139,253	153,897	.....	.....	.....	.....
Clear Creek	1,210.0	2,053.5	42,450	133,254	172,284	214,734	.....	.....	.....	.....
Custer	9,310.0	.....	.....	316,350	409,009	409,009	.....	.....	.....	.....
Gilpin	23.0	18.1	374	97	125	499	11,425.7	236,190	*62,322	*80,576
Huerfano	29.5	29.5	610	2,212	2,860	3,470	.....	.....	.....	.....
Lake §	11,828.0	118.3	2,445	823,702	1,064,964	1,067,409	.....	.....	.....	.....
Ouray	479.0	1,457.1	30,121	87,093	112,603	142,724	.....	.....	.....	.....
San Juan	1,372.0	.....	.....	112,960	146,046	146,046	.....	.....	.....	.....
Summit	400.0	200.0	4,134	26,800	34,650	38,784	.....	.....	.....	.....
Scattered .....	.....	.....	.....	.....	.....	.....	4,078.7	84,314	147,707	190,970
Total	25,779.5	6,007.9	124,194	1,631,644	2,109,553	2,233,747	15,504.4	320,504	219,516	283,812

* Estimated.

† 14,384 tons lost by concentration.

‡ 4,684 tons lost by concentration.

§ Including the Leadville district.

In the foregoing tables the following are the more important items of uncertainty or inadequacy of data:

Arapahoe County.—In this county, as well as in Jefferson and Pueblo counties, no mines producing gold and silver are known to exist. In these, however, are located important smelting works, which buy and treat ores from almost every county in the State, as well as from Montana and New Mexico. The bullion production of these counties would therefore be an important fraction of the total bullion yield of the State. It has, however, been considered best to apportion this yield as nearly as possible among the counties in which the ore was raised. This has been done in the following manner: The greater part of the ore treated

could be traced back to the county where it was raised, and the total bullion product of each lot of ore was deduced from the average assay value of such lot, of the total amount treated, and of the total amount of bullion produced, in the case of each individual smelter. A portion of ore treated and bullion produced therefrom, which could not be directly traced back to its source, was distributed on estimated proportions, founded mainly on the relative amounts of ore produced, as determined by schedules and previous estimates. In considering the amount of bullion produced and ore treated, there is this element of uncertainty in some of the calculations, that the larger smelters cannot always say that the bullion produced was from the very lots of ore purchased, as they keep a varying stock of ore on hand. It is probable, however, that, considering the whole, the figures obtained are sufficiently near the truth.

Boulder County.—No reliable data could be obtained in regard to the Niwot mine, which is said to produce about 15,000 tons of ore per year. In general the returns from this county were more incomplete and less satisfactory than from most counties in the State. The product, as obtained from smelters, is approximately correct; that from mills less certain and probably incomplete.

Chaffee County contains a number of promising mines, but owing to absence of owners no reliable data of production during census year could be obtained.

Clear Creek County.—One element of uncertainty in this county is the very common practice of leasing the mine to one or more parties, who pay the owner a royalty, or a portion of the gross product. A second is, that the ores are sampled, frequently concentrated, and sometimes treated in Gilpin County. Small lots of rich ore have been also shipped to smelters in the east, of which no record could be obtained. The loss by concentration (14,384 tons) was obtained by actual returns from ore-dressing works; in one case only, of a few hundred tons, an estimate being made of the degree of concentration. The proportionately large loss in treatment is due, doubtless, to defective systems of working, but may be less than shown by the figures given above, since the product of rich ores shipped east does not appear here.

Custer County.—Its production is relatively low, since the Bassick mine did not produce during a great part of the census year. The loss by concentration (4,684 tons) is an estimate, deducting the sum of tons treated and tons remaining on hand from tons raised.

Gilpin County.—Owing to the system pursued by a large proportion of the mines and mills, viz: that the miners send their ore to custom mills to be treated, and receive in return the bullion produced, less charges, without any assay control to determine how much was lost in treatment, or any record being kept by mills of value of bullion returned, it has been necessary to estimate a large proportion of the bullion thus produced. The express returns give for the year ending June 30, 1880,

a shipment from Central City of 88,016 ounces gold bullion, of reported value of \$1,320,260. The census figures for the year ending May 31, 1880, are somewhat less, viz: For the mill production, 54,361.8 ounces fine gold, having a mint value of \$1,123,758.11, showing that this estimate is probably somewhat under the truth, although it is not certain that absolutely all bullion shipped from Central City was produced within Gilpin County. The figures in the column of "Bullion from ore raised prior to census year" are an estimate of the yield of tailings from the mills which were sold to smelters during the year, and which are supposed to come mainly from ore raised during previous years.

Gunnison County.—But few mines were sufficiently developed to be regular producers during the census year, and many small lots shipped out for treatment may have escaped the record.

Hinsdale County.—The principal smelting works of the San Juan region are located here, and its production includes probably some small lots of ore raised in Ouray and San Juan counties, which could not be segregated.

Huerfano County has but few mines. From only a single district were returns made by the expert who had charge of this portion of the State.

Lake County.—Is the largest producer and furnishes the most accurate data, though it has been impossible in every case to actually trace back the bullion produced to the individual mine from which it came. The figures given are known to be under the truth for the following reason: The "American" and "Gage, Hagaman & Co.'s" smelters ran during a portion of the year, but were shut down and changed hands, so that when these statistics were collected no record, or even estimate, could be obtained of the amount of bullion produced by them. A thousand tons of crude bullion, of an average of 300 ounces silver per ton, would probably be an outside figure for the production of the two. This would add 300,000 ounces silver to the total production for the year. No record was obtained of the amount of ore, if any, which was shipped directly from Leadville to the smelting works at Omaha; its influence on the total production would be, at all events, inconsiderable. With these exceptions the figures given present a very accurate estimate of the bullion produced. With regard to the gold production the amount contained in the ores is in general too small to be taken account of, and it is only when concentrated in the lead bullion that it becomes appreciable; moreover a considerable portion of it comes from small lots of auriferous ores purchased by smelters from mines or prospects in outlying districts within the county, and in some cases from Gunnison or Summit counties. The gold contents of ore raised had therefore to be largely determined by estimate.

La Plata County.—From this county reports of only a single district were obtained, as the mines were as yet but little developed in the census year; probably many small lots of ore are unaccounted for.

Ouray County.—Doubtless from this county also the returns are some-

what incomplete, and it is certain that some addition is due to the amount of "bullion produced" which has been credited to it. Unfortunately data are wanting for making an accurate estimate, although it is known that some of this has been credited to Hinsdale County.

Park County.—At the time of collecting these statistics accurate data could be obtained from but few of the producing mines of this county; it has been necessary, therefore, to deduce them largely from information obtained from samplers and smelters, and estimate their proportionate bullion yield.

Rio Grande County.—Here, also, returns were obtained from but a single district.

San Juan County.—To this the same remarks are applicable which were made in regard to Ouray County.

Summit County.—From this county, for various reasons, the returns as regards the census year are rather incomplete, and figures probably below the truth. The bullion produced also had to be largely estimated. The following years will probably show an increased production.

To show the data from which the figures given above have been obtained the number of mines from which full schedules were received is subjoined, and the proportion thereof that have been bullion-producers during the census year, as well as those producers of which data have been obtained otherwise than by schedules and visits of census experts:

Total deep mines scheduled.....	249
Productive mines scheduled.....	126
Productive mines reported otherwise.....	249
Total productive mines reported.....	375
Total all mines reported on.....	498

TABLE XX.—COLORADO—*Production of placer mines for the year ending May 31, 1880.*

County.	Gold.	
	Ounces.	Dollars.
Chaffee.....	1,275.0	26,357
Clear Creek.....	410.0	8,476
Lake.....	835.0	17,261
Park.....	1,000.0	20,672
Routt.....	241.9	5,000
Summit.....	1,160.0	23,979
Total.....	4,921.9	101,745

The above table gives all the data which were obtained by the experts engaged in this work on placer and hydraulic workings in the State. The inherent difficulty of obtaining complete information with regard to surface mining, in that it is carried on only during a limited portion of the year, and in great part by individuals who keep no accurate account of their gains, renders these returns necessarily incomplete here as else-

where. In Colorado, moreover, owing to the fact that other gold bullion is produced so largely, it has been impossible to supplement these figures by express or mint returns. While the above figures doubtless very inadequately express the production of placer gold for the State, it is a fact that this production was relatively small during the census year, owing to the unusual activity in prospecting for and working deep mines.

COPPER AND LEAD.—Although these belong rather to the useful than to the precious metals, their importance among the mineral products of Colorado, and their intimate connection with the production of gold and silver, render their consideration here essential. In Table XXI, given below, only the crude metal obtained from ores actually smelted within the State is given, no account being taken of the copper or lead contained in ores which were shipped outside of the State for treatment. This amount is, however, of comparatively little importance, forming probably not over 5 per cent. of the total product. The lead product was all in the form of argentiferous lead bullion, which was shipped to various smelters in the East to be refined.

The copper product was partly as matte, but largely in the form of copper oxide. Of the actual shipments of the latter a portion has been produced from ores raised in Montana; a proportionate amount of the total product has, however, been credited to that Territory in its appropriate place.

In calculating the value of these metals the average market value of either for the year has been assumed as $4\frac{1}{2}$ cents per pound for lead, 20 cents per pound for copper.

TABLE XXI.—COLORADO—*Crude bullion product for the year ending May 31, 1880.*

County.	Gross tons.	Lead.		Copper.		Gold.		Silver.		Total.
		Tons.	Dolls.	Tons.	Dolls.	Ozs.	Dolls.	Ozs.	Dolls.	Dolls.
Arapahoe	1, 225	.....	.....	980	392, 000	.....	.....	.....	.....	392, 000
Hinsdale	800	790. 00	71, 100	.....	.....	270. 0	5, 581	96, 878	125, 254	201, 935
Jefferson	1, 117	525. 75	47, 318	598	239, 200	10, 315. 0	213, 231	565, 020	730, 514	1, 230, 263
Lake	28, 383	28, 226. 00	2, 540, 340	.....	.....	3, 830. 2	79, 177	8, 053, 946	10, 412, 947	13, 032, 464
Ouray	90	89. 00	8, 010	.....	.....	.....	.....	24, 103	31, 163	39, 173
Park	57	56. 00	5, 040	.....	.....	.....	.....	11, 996	15, 510	20, 550
Pueblo	2, 191	2, 126. 10	191, 385	.....	.....	1, 347. 0	27, 845	1, 557, 608	2, 013, 831	2, 233, 061
Summit	260	256. 00	23, 040	.....	.....	.....	.....	10, 400	13, 446	36, 486
Total	34, 123	32, 069. 25	2, 886, 233	1, 578	631, 200	15, 762. 2	325, 834	10, 319, 951	13, 342, 665	17, 185, 932

Lead, \$90 per ton. Copper, \$400 per ton.

In the subjoined table are shown the relative amounts of ore treated by mill process and by smelting, and their average yield per ton. Its principal value is to show the average character of ore in each county in reference to its adaptation to either process of reduction. It would have been extremely interesting, had the data been such as would yield accurate results, to have given the assay value of the ore treated in either case, and thus compare the relative losses in either process, but

the number of cases in which it has been necessary to estimate product from assay value, or *vice versa*, would seriously impair the value of such comparison. This subject will be found treated at length in the final census report.

TABLE XXII.—COLORADO—*Production of smelting works and amalgamating mills for the year ending May 31, 1880.*

County.	Ore raised and smelted.	Average yield per ton.			Bullion produced from ore smelted during census year.				
		Gold.	Silver.	Gold and silver.	Gold.		Silver.		Total.
		Tons.	Dollars.	Dollars.	Ounces.	Dollars.	Ounces.	Dollars.	Dollars.
Boulder	3,412.0	68 52	47 10	115 62	11,309.8	233,794	124,307	160,717	394,511
Chaffee	161.0	*6 33	*46 65	*52 98	*49.3	*1,019	*5,809	*7,510	*8,529
Clear Creek † ..	9,701.0	11 93	116 26	128 19	*5,599.3	115,748*	872,344	*1,127,854	*1,243,602
Custer †	982.0	14 24	64 65	78 89	676.2	13,978	49,107	63,490	77,468
Gilpin	10,218.0	48 36	28 26	76 62	23,901.5	494,088	223,305	288,711	782,799
Gunnison	252.0	18 11	109 00	118 11	*220.3	*4,554	19,507	25,221	29,775
Hinsdale	2,695.0	2 61	13 09	15 70	277.8	5,743	99,958	129,236	134,979
Huerfano	5.5	.....	57 27	57 27	.....	.....	244	315	315
Lake	140,623.0	58	89 34	89 92	3,913.7	80,903	9,717,819	12,564,168	12,645,071
La Plata	12.0	8 58	226 00	234 58	5.0	103	2,098	2,713	2,816
Ouray	1,015.0	6 66	100 62	107 28	327.0	6,760	78,995	102,133	108,893
Park	5,364.0	*18	*95 67	*95 85	*46.0	*951	*396,921	*513,179	*514,130
Rio Grande .....	.....	.....	.....	.....	.....	.....	.....	.....	.....
San Juan	1,353.0	*1 29	*104 31	*105 60	*84.0	*1,736	*109,166	*141,141	*142,877
Summit	3,771.0	.....	*93 91	*93 91	.....	.....	*273,915	*354,145	*354,145
Total	179,564.5	5 34	86 21	91 55	46,409.9	959,377	11,973,495	15,480,533	16,439,910

County.	Ore raised and milled.	Average yield per ton.			Bullion produced from ore milled during census year.				
		Gold.	Silver.	Gold and silver.	Gold.		Silver.		Total.
		Tons.	Dollars.	Dollars.	Ounces.	Dollars.	Ounces.	Dollars.	Dollars.
Boulder	4,146	17 05	46 58	63 63	3,418.5	70,667	149,381	193,135	263,802
Chaffee .....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Clear Creek † ..	11,736	8 78	46 54	55 32	*4,983.0	*103,008	*422,430	*546,160	*649,168
Custer †	1,118	38	7 88	8 26	20.0	413	6,820	8,818	9,231
Gilpin	113,427	9 91	30	10 21	54,361.9	1,123,760	26,769	34,610	1,158,370
Gunnison .....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hinsdale .....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Huerfano .....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lake .....	.....	.....	.....	.....	.....	.....	.....	.....	.....
La Plata .....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ouray	296	33 35	2 86	36 21	477.5	9,871	656	848	10,719
Park .....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Rio Grande	550	9 79	.....	9 79	260.5	5,385	.....	.....	5,385
San Juan .....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Summit	675	*7 66	.....	*7 66	*250.0	*5,168	.....	.....	*5,168
Total	131,948	9 99	5 94	15 93	63,771.4	1,318,272	606,056	783,571	2,101,843

* Estimated.

† 14,384 tons lost by concentration.

‡ 4,684 tons lost by concentration.

DAKOTA.

The metallic production of Dakota is derived from the region of the Black Hills, and in greater part from Lawrence County, where free milling gold-quartz ores of low grade are reduced in amalgamating mills of

great size. The perfection to which the milling process has been brought is shown by the large percentage of the assay value extracted. Custer and Pennington counties are opening new mines, but had scarcely become producers during the census year.

TABLE XXIII.—DAKOTA—Production of deep mines for the year ending May 31, 1880.

County.	Ore raised during census year.	Average assay value per ton.			Assay value of ore raised during census year.				
		Gold.	Silver.	Gold and silver.	Gold.		Silver.		Total.
		Tons.	Dolls.	Dolls.	Ozs.	Dolls.	Ozs.	Dolls.	Dolls.
Custer	2,250	13 89	0 07	13 96	1,511.7	31,250	122	158	31,408
Lawrence	526,998	7 65	34	7 99	195,063.3	4,032,316	136,190	176,080	4,208,396
Pennington	7,500	10 31	09	10 40	3,738.9	77,290	541	699	77,889
Total	536,748	7 71	33	8 04	200,313.9	4,140,856	136,853	176,937	4,317,793

County.	Ore raised and treated.	Average yield per ton.			Bullion produced from ore raised and treated during census year.				
		Gold.	Silver.	Gold and silver.	Gold.		Silver.		Total.
		Tons.	Dolls.	Dolls.	Ozs.	Dolls.	Ozs.	Dolls.	Dolls.
Lawrence	495,630	6 33	0 15	6 48	151,759.7	3,137,154	54,577	70,563	3,207,717
Pennington	500	3 20	.....	3 20	77.4	1,600	.....	.....	1,600
Total	496,130	6 33	14	6 47	151,837.1	3,138,754	54,577	70,563	3,209,317

County.	Ore raised but not treated.	Assay value of ore raised during census year and remaining on hand at close of year.					Bullion produced during census year from ore previously raised.				
		Gold.		Silver.		Total.	Gold.		Silver.		Total.
		Tons.	Ozs.	Dolls.	Ozs.	Dolls.	Ozs.	Dolls.	Ozs.	Dolls.	Dolls.
Custer	2,250	1,511.7	31,250	122	158	31,408	.....	.....	.....	.....	.....
Lawrence	31,368	12,621.7	260,914	24,741	31,988	292,902	5,622.7	116,233	.....	.....	116,233
Pennington	7,000	3,619.9	74,830	541	699	75,529	.....	.....	.....	.....	.....
Total	40,618	17,753.3	366,994	25,404	32,845	399,839	5,622.7	116,233	.....	.....	116,233

Dakota placer mines.—The following table gives the production of placer mines so far as could be ascertained by the expert in charge of this district. The amount seems very small, compared with the supposed value of the surface deposits in this region. This may be in part accounted for by the fact that several important companies were making ditches, and preparing for work on a large scale, but had not become producers during the census year.

TABLE XXIV.—DAKOTA—*Production of placer mines for the year ending May 31, 1880.*

County.	Gold.	
	Ounces.	Dollars.
Lawrence	2, 307. 5	47, 700
Pennington	152. 8	3, 159
Total	2, 460. 3	50, 859

MONTANA.

Montana has within its boundaries the elements favorable to a large production of the precious metals—rich and varied ores and abundant fuel, both coal and wood. As yet, however, owing to lack of development and want of sufficient transportation facilities, it has not taken its proper rank as a producer. Owing to the great extent of territory over which its mines are scattered, and the fact that, from circumstances beyond our control, the collection of statistics was not completed until the winter was far advanced and travel rendered thereby very difficult, our data leave something to desire in point of completeness. It was evident that the figures of gold production deduced from the schedules were below the truth, since the mint returns report the gold production of Montana as a little over a million dollars in excess. As the mint figures are certainly below the truth, it was proper that this difference should be added, the only question being to what branch of mining it should be credited. Now, the census returns from placer and hydraulic mines were notoriously incomplete, since, owing to the lateness of the season, but few of their owners could be found; but it is well known that they form the most important element in the gold production of Montana. On the other hand, it was thought that returns had been obtained from practically all the mills and smelting works. Under these circumstances it was judged best to discard the census figures for hydraulic and placer mines altogether, and assume as their production the difference between the amount of gold produced, as determined by mill and smelters' returns, and the total product obtained from mint returns. While, therefore, it is possible that a small amount of the gold credited to hydraulic and placer mines may belong to mill production, it is probably not more than that by which the mint returns fall short of giving the total gold production of the Territory as gold which, for various reasons, had not passed through the hands of its agents.

The following table gives the production of the deep mines of Montana by counties, and the yield of the ore treated, as far as could be ascertained, though some small lots of ore are known to have been shipped east, which could not be traced:

TABLE XXV.—MONTANA—Production of deep mines for the year ending May 31, 1880.

County.	Ore raised during census year.	Average assay value per ton.			Assay value of ore raised during census year.				
		Gold.	Silver.	Gold and silver.	Gold.		Silver.		Total.
		Tons.	Dolls.	Dolls.	Ounces.	Dolls.	Ounces.	Dolls.	Dolls.
Beaver Head	10,936	2 22	96 19	98 41	1,176.2	24,314	813,727	1,052,068	1,076,382
Deer Lodge	81,256	6 34	45 19	51 53	24,910.7	514,950	2,840,198	3,672,092	4,187,042
Jefferson	3,335	54 66	29 70	84 36	8,818.6	182,297	76,616	99,057	281,354
Lewis and Clarke	10,493	16 18	6 33	22 51	8,215.0	169,819	51,379	66,428	236,247
Madison	8,838	28 45	1 40	29 85	*12,166.2	*251,498	9,582	12,389	*263,887
Total	114,858	9 95	42 68	52 63	55,286.7	1,142,878	3,791,502	4,902,034	6,044,912

County.	Ore raised and treated.	Average yield per ton.			Bullion produced from ore raised and treated during census year.				
		Gold.	Silver.	Gold and silver.	Gold.		Silver.		Total.
		Tons.	Dolls.	Dolls.	Ounces.	Dolls.	Ounces.	Dolls.	Dolls.
Beaver Head	10,902.0	1 81	66 90	68 71	955.4	19,750	564,110	729,338	749,088
Deer Lodge	57,029.0	5 92	34 83	40 75	16,337.7	337,729	1,536,134	1,986,067	2,323,796
Jefferson	3,058.0	18 49	24 54	43 03	2,717.2	56,169	57,670	74,562	130,731
Lewis and Clarke	10,343.0	12 71	2 44	15 15	6,361.3	131,499	19,554	25,281	156,780
Madison	5,264.5	16 49	07	16 56	4,198.8	86,798	292	378	87,176
Total	86,576.5	7 30	32 52	39 82	30,570.4	631,945	2,177,760	2,815,626	3,447,571

County.	Ore raised but not treated.	Assay value of ore raised during census year and remaining on hand at close of year.					Bullion produced from ore raised prior to census year.				
		Gold.		Silver.		Total.	Gold.		Silver.		Total.
		Tons.	Ozs.	Dolls.	Ozs.	Dolls.	Ozs.	Dolls.	Ozs.	Dolls.	Dolls.
Beaver Head	34.0	.....	.....	.....	4,208	5,440	.....	.....	.....	.....	.....
Deer Lodge	24,227.0	5,867.6	121,294	852,237	1,101,857	1,223,151	203.2	4,200	61,808	79,911	84,111
Jefferson	297.0	3,990.9	82,499	2,700	3,491	85,990	11.3	234	1,029	1,330	1,564
Lewis and Clarke	150.0	119.0	2,460	600	776	3,236	.....	.....	.....	.....	.....
Madison	3,573.5	2,883.7	59,611	558	721	60,332	313.5	6,481	.....	.....	6,481
Total	28,281.5	12,861.2	265,864	860,303	1,112,285	1,378,149	528.0	10,915	62,837	81,241	92,156

* Estimated.

In the foregoing table the following possible cause of error should be noted: In Summit Valley district, Deer Lodge County, owing to the incomplete character of some of the returns, and the fact that many mines sell ore to both mills and smelters, there has been a possible duplication in estimating the bullion product. This overestimate, if such it really is, would not, however, amount to more than 500 tons, and is probably more than offset by the insufficiency of the data obtained. Considerable copper ore carrying silver goes out of the county for treatment, some of which could not be traced. Manganese ore, carrying some sil-

ver, is used by the smelters as flux, and is not accounted for in the "Tons raised"; but its yield should appear in the "Bullion produced".

The following table shows the relative amounts of ore reduced in stamp mills and by smelting works, with the average yield per ton, and total contents in gold and silver in each case:

TABLE XXVI.—MONTANA—Ore treated by smelting works and amalgamating mills.

	Ore treated.	Average yield per ton.			Bullion produced.				
		Gold.	Silver.	Gold and silver.	Gold.		Silver.		Total.
		Tons.	Dollars.	Dollars.	Dollars.	Ounces.	Dollars.	Ounces.	Dollars.
Smelted	14,680.0	64	78 36	79 00	454.4	9,393	889,362	1,149,856	1,159,249
Milled	71,896.5	8 65	23 18	31 83	30,116.0	622,552	1,288,398	1,665,770	2,288,322
Total	86,576.5	7 30	32 52	39 82	30,570.4	631,945	2,177,760	2,815,626	3,447,571

HYDRAULIC AND PLACER MINES.—The gravel deposits of Montana form an important source of its wealth, and their product is known to be very considerable. The figures for this product, as explained above, have been assumed, in the absence of more reliable data derived from direct information, and are:

Gold..... ounces..... 56,255.6
Value..... \$1,162,908

The counties from which hydraulic-mine returns were received are Deer Lodge, Meagher, Beaver Head, and Lewis and Clarke, the relative amount of production reported from each standing in the order in which they are named above.

The ores of Montana, like those of Colorado, contain considerable amounts of copper and lead, which cannot be neglected in considering its production of metals. The table below gives the amounts which could be traced, a portion of the copper having been reduced to copper oxide in Colorado. The figures quoted are for crude bullion which was not reduced to the metallic state within the Territory. A certain amount of copper ore was shipped directly east from Montana, but its value or contents could not be ascertained.

TABLE XXVII.—MONTANA—Crude bullion product for the year ending May 31, 1880.

County.	Gross tons.	Base bullion.				Precious metal contents.				Total.
		Lead.		Copper.		Gold.		Silver.		
		Tons.	Dolls.	Tons.	Dolls.	Ozs.	Dolls.	Ounces.	Dolls.	
Beaver Head	1, 568	1, 132.5	101, 925	186. 25	74, 500	.....	.....	562, 574	727, 352	903, 77
Deer Lodge	525	.....	.....	420. 00	168, 000	343. 5	7, 101	160, 300	207, 252	382, 35
Jefferson	83	81. 5	7, 335	.....	.....	332. 0	6, 863	30, 378	39, 276	53, 47
Total	2, 176	1, 214. 0	109, 260	606. 25	242, 500	675. 5	13, 964	753, 252	973, 880	1, 339, 60

Lead, \$90 per ton. * Copper, \$400 per ton.

NEW MEXICO.

Although during the census year the mines of New Mexico were attracting much attention, their practical development was awaiting the completion of the railroads which were about to intersect it. Its mining districts were, many of them, difficult and even dangerous of access, and it was almost impossible to ascertain in advance whether they had actually producing mines. The collection of statistics under these circumstances was peculiarly difficult, and the completeness of the material obtained was seriously impaired by the assassination of Col. Charles Potter, the expert in charge of this Territory. The data presented below do not necessarily give a fair idea of the capabilities of the Territory as a mineral producer. It is believed, however, that the quantity of ore produced during the census year, and not accounted for below, is not of very great amount.

The subjoined table gives the production of the deep mines by counties:

TABLE XXVIII.—NEW MEXICO—*Production of deep mines for the year ending May 31, 1880.*

County.	Ore raised during census year.	Average assay value per ton.			Total assay value of ore raised during census year.				
		Gold.	Silver.	Gold and silver.	Gold.		Silver.		Total.
		Tons.	Dolls.	Dolls.	Ozs.	Dolls.	Ozs.	Dolls.	Dolls.
Doña Ana.....	718.5	82 65	.....	82 65	2,872.8	59,386	.....	.....	59,386
Grant.....	9,668.0	2 62	79 78	82 40	1,225.0	25,323	596,567	771,301	796,624
Santa Fé.....	100.0	20 67	32 32	52 99	100.0	2,067	2,500	3,232	5,299
Total.....	10,486.5	8 28	73 86	82 14	4,197.8	86,776	599,067	774,533	861,309

County.	Ore raised and treated.	Average yield per ton.			Bullion produced from ore raised during census year.				
		Gold.	Silver.	Gold and silver.	Gold.		Silver.		Total.
		Tons.	Dolls.	Dolls.	Ounces.	Dollars.	Ounces.	Dollars.	Dollars.
Doña Ana.....	718.5	49 59	.....	49 59	1,723.7	35,632	.....	.....	35,632
Grant.....	6,734.0	2 04	58 26	60 30	663.8	13,722	303,455	392,337	406,059
Total.....	7,452.5	6 62	52 65	59 27	2,387.5	49,354	303,455	392,337	441,691

County.	Ore raised but not treated.	Assay value of ore raised during census year and remaining on hand at close of year.				
		Gold.		Silver.		Total.
		Tons.	Ounces.	Dollars.	Ounces.	Dollars.
Grant.....	2,934	.....	.....	.....	178,288	230,509
Santa Fé.....	100	100	2,067	2,500	3,232	5,299
Total.....	3,034	100	2,067	180,788	233,741	235,808

PLACER MINES.—Considerable rich placer ground is known to exist in New Mexico, but as yet but little gold has been obtained from it, owing to want of water. No record could be obtained of any product from such workings during the census year.

WYOMING.

Wyoming is surrounded on three sides by important mining regions, but has as yet developed but few mines within its borders. During the census year, as far as could be ascertained, the actual production of gold and silver has been confined to Sweetwater County, of which the production is given below:

TABLE XXIX.—WYOMING—*Production of deep mines for the year ending May 31, 1880.*

County.	Ore raised during census year.	Average assay value per ton.			Total assay value of ore raised during census year.				
		Gold.	Silver.	Gold and silver.	Gold.		Silver.		Total.
		Tons.	Dolls.	Dolls.	Ounces.	Dollars.	Ounces.	Dollars.	Dollars.
Sweetwater	843	*27 42	.....	*27 42	*1, 118. 1	*23, 113	.....	.....	*23, 113
Total	843	*27 42	.....	*27 42	*1, 118. 1	*23, 113	.....	.....	*23, 113

County.	Ore raised and treated.	Average yield per ton.			Bullion produced from ore raised and treated during census year.				
		Gold.	Silver.	Gold and silver.	Gold.		Silver.		Total.
		Tons.	Dolls.	Dolls.	Ounces.	Dollars.	Ounces.	Dollars.	Dollars.
Sweetwater	843	20 55	.....	20 55	837. 9	17, 321	.....	.....	17, 321
Total	843	20 55	.....	20 55	837. 9	17, 321	.....	.....	17, 321

* Estimated.

STATISTICS OF THE EASTERN DIVISION.

The following tables, which are grouped together without comment, are compiled from schedule data furnished by Prof. Raphael Pumpelly, together with such information as could be gathered from other sources than the direct census investigation. Some unavoidable gaps occur in the tables, arising chiefly from the uncertainty regarding assay values to be expected where mining is conducted on a small scale. The estimates for Michigan and for Tennessee are not included in this exhibit, as they are derived exclusively from material other than that collected directly by the experts.

TABLE XXX.—ALABAMA—Production of deep mines for the year ending May 31, 1880.

County.	Ore raised and treated.	Average yield per ton—gold.	Gold bullion produced from ore raised and treated during census year.	
	Tons.	Dollars.	Ounces.	Dollars.
Cleburn.....	100	10 00	48.4	1,000
Talladega.....	24	12 50	14.5	300
Total.....	124	10 50	62.9	1,300

TABLE XXXI.—GEORGIA—Production of deep mines for the year ending May 31, 1880.

County.	Ore raised during cen- sus year.	Average assay value per ton—gold.	Assay value of ore raised during census year.		Ore raised and treated during census year.	Average yield per ton— gold.	Gold bullion produced from ore raised and treated during census year.		Ore raised but not treated.	Assay value of ore raised during census year and remaining on hand at close of year.	
	Tons.	Dolls.	Ozs.	Dolls.	Tons.	Dolls.	Ozs.	Dolls.	Tons.	Ozs.	Dolls.
Cherokee	262	22 00	151.1	3,124	205	11 22	111.3	2,300	57	60.7	1,255
Cobb <i>a</i>	100				100	4 00	19.3	400			
Forsyth <i>a</i>	40				40	5 08	9.8	203			
Hall <i>a</i>	150				150	10 00	72.6	1,500			
Lincoln <i>a</i>	550				550	10 88	289.5	5,984			
McDuffie <i>a</i>	100				100	6 00	29.0	600			
Meriwether <i>a</i>	1,590				1,590	2 00	153.8	3,180			
Total	2,792		151.1	3,124	2,735	5 18	685.3	14,167	57	60.7	1,255

α Assay values not given.

TABLE XXXII.—GEORGIA—Production of placer-mines for the year ending May 31, 1880.

County.	Gold.	
	Ounces.	Dollars.
Cherokee.....	10.9	225
Hall.....	183.2	3,788
Lumpkin.....	2,838.3	58,673
Union.....	72.6	1,500
White.....	129.5	2,677
Total.....	3,234.5	66,863

TABLE XXXIII.—MAINE—*Production of deep mines for the year ending May 31, 1880.*

County.	Ore raised during census year.	Average assay value per ton.			Assay value of ore raised during census year.				
		Gold.	Silver.	Gold and silver.	Gold.		Silver.		Total.
		Tons.	Dolls.	Dolls.	Dolls.	Ounces.	Dollars.	Ounces.	Dollars.
Hancock	1,800	-----	30 00	30 00	-----	-----	39,446	51,000	51,000
Penobscot	400	26 87	5 17	32 04	519.9	10,748	1,599	2,068	12,816
York	50	6 75	32 30	39 05	16.3	337	1,249	1,615	1,952
Total	2,250	4 93	24 30	29 23	536.2	11,085	42,294	54,683	65,768

County.	Ore raised and treated.	Average yield per ton.			Bullion produced from ore raised and treated during census year.					
		Gold.	Silver.	Gold and silver.	Gold.		Silver.		Total.	
	Tons.	Dolls.	Dolls.	Dolls.	Ounces.	Dollars.	Ounces.	Dollars.	Dollars.	
Hancock	400	7 50	18 00	25 50	145. 1	3, 000	5, 569	7, 200	10, 200	
Total	400	7 50	18 00	25 50	145. 1	3, 000	5, 569	7, 200	10, 200	

County.	Ore raised but not treated.	Assay value of ore raised during census year and remaining on hand at close of year.				
		Gold.		Silver.		Total.
		Tons.	Ounces.	Dollars.	Ounces.	Dollars.
Hancock	1,400	-----	-----	32,486	42,000	42,000
Penobscot	400	519.9	10,748	1,599	2,068	12,816
York	50	16.3	337	1,249	1,615	1,952
Total	1,850	536.2	11,085	35,334	45,683	56,768

TABLE XXXIV.—NEW HAMPSHIRE—*Production of deep mines for the year ending May 31, 1880.*

County.	Ore raised and treated.	Average yield per ton.			Bullion produced from ore raised and treated during census year.					
		Gold.	Silver.	Gold and silver.	Gold.		Silver.		Total.	
		Tons.	Dolls.	Dolls.	Dolls.	Ounces.	Dollars.	Ounces.	Dollars.	Dollars.
Grafton	2 183	5 04	7 32	12 36	532. 1	11, 000	12, 375	16, 000	27, 000	
Total	2 183	5 04	7 32	12 36	532. 1	11, 000	12, 375	16, 000	27, 000	

TABLE XXXV.—NORTH CAROLINA—*Production of deep mines for the year ending May 31, 1880.*

County.	Ore raised during census year.	Average assay value per ton.			Assay value of ore raised during census year.				
		Gold.	Silver.	Gold and silver.	Gold.		Silver.		Total.
	Tons.	Dolls.	Dolls.	Dolls.	Ounces.	Dollars.	Ounces.	Dollars.	Dollars.
Davidson	20,200	17 50	2 50	20 00	16,931.2	*350,000	38,673	*50,000	*400,000
Gaston	1,821	.....	.....	.....	.....	.....	.....	.....	.....
Guilford	10	.....	.....	.....	.....	.....	.....	.....	.....
Mecklenburg	11,370	.....	.....	.....	.....	.....	.....	.....	.....
Moore	625	.....	.....	.....	.....	.....	.....	.....	.....
Nash	60	.....	.....	.....	.....	.....	.....	.....	.....
Rowan	1,200	9 00	3 00	12 00	522.4	10,800	2,784	3,600	14,400
Stanley	500	.....	.....	.....	.....	.....	.....	.....	.....
Total	35,786	.....	.....	.....	17,453.6	360,800	41,457	53,599	414,400

County.	Ore raised and treated.	Average yield per ton.			Bullion produced from ore raised and treated during census year.				
		Gold.	Silver.	Gold and silver.	Gold.		Silver.		Total.
	Tons.	Dolls.	Dolls.	Dolls.	Ozs.	Dollars.	Ozs.	Dollars.	Dollars.
Davidson	206	10 00	.....	10 00	96.8	2,000	.....	.....	2,000
Gaston	1,821	5 00	.....	5 00	440.5	9,107	.....	.....	9,107
Guilford	10	28 70	.....	28 70	13.9	287	.....	.....	287
Mecklenburg	11,370	8 33	.....	8 33	4,584.5	94,770	.....	.....	94,770
Moore	625	7 84	0 16	8 00	237.0	4,900	77	100	5,000
Nash	60	20 07	.....	20 07	58.2	1,204	.....	.....	1,204
Stanley	500	4 00	.....	4 00	96.8	2,000	.....	.....	2,000
Total	14,586	7 83	.....	7 83	5,527.7	114,268	77	100	114,368

County.	Ore raised but not treated.	Assay value of ore raised during census year and remaining on hand at close of year.				
		Gold.		Silver.		Total.
	Tons.	Ozs.	Dolls.	Ozs.	Dollars.	Dollars.
Davidson	20,000	*16,931.2	*350,000	*38,673	*50,000	*400,000
Rowan	1,200	522.4	10,800	2,784	3,600	14,400
Total	21,200	*17,453.6	*360,800	*41,457	*53,600	414,400

* Estimated.

TABLE XXXVI.—NORTH CAROLINA—*Production of placer mines for the year ending May 31, 1880.*

County.	Gold.	
	Ounces.	Dollars.
Montgomery	207.6	4,291
Pope	19.1	396
Total	226.7	4,687

TABLE XXXVII.—SOUTH CAROLINA—*Production of deep mines for the year ending May 31, 1880.*

County.	Gold bullion produced from ore raised and treated during census year.	
	Ounces.	Dollars.
Abbeville.....	24.2	500
Colleton.....	290.2	6,000
Total.....	314.4	6,500

TABLE XXXVIII.—SOUTH CAROLINA—*Production of placer mines for the year ending May 31, 1880.*

County.	Gold.	
	Ounces.	Dollars.
Chesterfield.....	316.4	6,541
Total.....	316.4	6,541

TABLE XXXIX.—VIRGINIA—*Production of deep mines for the year ending May 31, 1880.*

County.	Ore raised during census year.	Average assay value per ton.			Assay value of ore raised during census year.				
		Gold.	Silver.	Gold and silver.	Gold.		Silver.		Total.
		Tons.	Dolls.	Dolls.	Ozs.	Dolls.	Ozs.	Dolls.	Dolls.
Buckingham.....	74								
Culpeper.....	90	40 09	1 40	41 49	174.5	3,608	97	126	3,734
Total.....	164				174.5	3,608	97	126	3,734

County.	Ore raised and treated.	Average assay value per ton—gold.	Gold bullion produced from ore raised and treated during census year.		Ore raised but not treated.	Assay value of ore raised during census year and remaining on hand at close of year.				
						Gold.		Silver.		Total.
						Ozs.	Dolls.	Ozs.	Dolls.	Dollars.
Buckingham.....	74	5 00	17.9	371						
Culpeper.....	5	35 80	8.7	179	85	164.8	3,408	94	122	3,530
Total from schedule data.....	79	6 96	26.6	550	85	164.8	3,408	94	122	3,530
Additional production shown by mint receipts.....			424.3	8,772						
Total.....			450.9	9,322	85	164.8	3,408	94	122	3,530

SILVER CONTAINED IN PLACER GOLD.

No account is taken by the miners of the silver alloyed with placer gold, unless in the exceptional cases where the value of the former is allowed for in the sale of the product, as in direct sales to the mints or United States assay offices. In the aggregate this silver forms a considerable item, which should be included in the total product, but which has usually been disregarded by statisticians.

The schedules of the experts contain data for a close estimate as to the average tenor of the placer product. A statement of the fineness in gold of samples from various localities is appended.

TABLE XL.—*Specimen examples of placer gold.*

CALIFORNIA.

County and locality.	Fineness in gold.	Remarks.
BUTTE.		
Centerville	0.900	
Cherokee Flat	0.970	
Magalia	0.900	
Morris Ravine	0.905—0.908	
Oroville	0.942	
CALAVERAS.		
Mokelumne Hill	0.850—0.960	
DEL NORTE.		
Bunker Hill Mine	0.887—0.925	
China Creek	0.900	
Happy Camp	0.875—0.935	
Indian Creek	0.900	
Wingate Mine	0.944—0.950	
EL DORADO.		
Placerville	0.980	
HUMBOLDT.		
Gold Bluffs	0.940	
Orleans Bar	0.726	Sold for \$13 to \$17 per ounce.
PLACER.		
Bath	0.850	
Dutch Flat	0.900—0.910	
Gold Run	0.900	
Iowa Hill	0.784—0.814	
Michigan Bluffs	0.925—0.960	
PLUMAS.		
Black Hawk Mine	0.924	
Cook's Cañon	0.885	
Gopher Hill	0.936	
Hungarian Hill	0.924	
Seneca	0.846	
SHASTA.		
Igo	0.885	
SISKIYOU.		
Callahan's Ranch	0.859	Sold for \$17.75 per ounce.
Cottonwood	0.860	
Coyote Gulch	0.900—0.950	
Galena Hill	0.880—0.930	
Greenhorn	0.850	
Humbug Creek	0.809—0.865	
Indian Creek	0.835—0.900	Sold for \$17 per ounce.
McAdams Creek	0.750—0.900	
Oro Fino	0.762	

TABLE XL.—*Specimen examples of placer gold*—Continued.

CALIFORNIA—Continued.

County and locality.	Fineness in gold.	Remarks.
Rattlesnake Creek	0.827	Sold for \$16.50 per ounce.
Sawyer's Bar	0.850	
Sciad Valley	0.887—0.912	Sold for \$16 to \$16.25 per ounce. Sold for \$16.75 per ounce. Sold for \$15 to \$17.12 per ounce.
Scott Valley	0.805	
South Fork Salmon	0.835	
Yreka	0.749—0.863	
STANISLAUS.		
La Grange	0.920	Sold for \$18 per ounce.
TRINITY.		
Buckeye	0.890—0.900	
Cañon Creek	0.894—0.896	
Chapman's and Fisher's Mines	0.914—0.917	
Douglas	0.912	
Indian Creek	0.920	
Junction City	0.875—0.915	
Red Hill	0.910—0.917	
Trinity Center	0.900	
Trinity Mine	0.887—0.903	
Weaver	0.906—0.927	

COLORADO.

CHAFFEE.		
Hope	0.850	
CLEAR CREEK.		
Jackson	0.880	
LAKE.		
California.....	0.850—0.875	
PARK.		
Alma township.....	0.819	
ROUTT.		
Hahn's Peak.....	0.666	
SUMMIT.		
Bevan.....	0.750—0.820	
Spalding.....	0.850—0.900	

DAKOTA.

LAWRENCE.		
Bear Gulch	0.940	
Cape Horn	0.870	
PENNINGTON.		
Cañon	0.925	
Confederate	0.925—0.940	
Jenny and Strawberry	0.940	

GEORGIA.

CHEROKEE.		
Fifteenth district	0.927	Sold for \$19.20 per ounce.
HALL.		
810 G. M. 9th and 12th districts	0.900—0.916	

TABLE XL.—*Specimen examples of placer gold*—Continued.

GEORGIA—Continued.

County and locality.	Fineness in gold.	Remarks.
LUMPKIN.		
Twelfth district.....	0.875—0.995	
Thirteenth district.....	0.962—0.992	
WHITE.		
Fourth district.....	0.945	
UNION.		
Tenth district.....	0.981	

IDAHO.

BOISÉ.		
Boisé Basin and vicinity	0.7806	Average of 413 lots.

MONTANA.

BEAVER HEAD.		
Bannock		0. 935
DEER LODGE.		
Gold Hill.....	0. 950—0. 956	
Henderson Gulch	0. 925—0. 957	
Independence.....	0. 725—0. 730	
McClellan's Gulch	0. 860—0. 930	Sold for \$17.50 per ounce.
Nelson.....	0. 935—0. 940	
Summit Valley	0. 700	
LEWIS AND CLARKE.		
Last Chance		0. 910
MEAGHER.		
German.....	0. 830—0. 835	
Thompson's Gulch	0. 945—0. 980	

OREGON.

BAKER.		
Amelia	0. 810—0. 900	
Blue Cañon	0. 840—0. 853	Sold for \$16.50 per ounce.
Chicken Creek	0. 725	Sold for \$15 per ounce.
Humboldt Basin	0. 789—0. 866	Do. Do.
Mormon Basin	0. 750	Sold for \$16 per ounce.
Pocahontas	0. 782—0. 851	Sold for \$15.50 to \$17 per ounce.
Rye Valley	0. 756	
Shasta	0. 850—0. 860	Sold for \$16.50 per ounce.
Willow Creek	0. 825	
CURRY.		
Sixes River	0. 825	Sold for \$17 per ounce.
DOUGLAS.		
Big Bend	0. 925—0. 950	Sold for \$17 per ounce.
Cañonville	0. 900—0. 956	
Green Mountain	0. 825—0. 830	
GRANT.		
Cañon City	0. 850—0. 900	Sold for \$17.60 per ounce.
Granite	0. 750—0. 761	
Marysville	0. 805—0. 887	Sold for \$16.25 to \$17.60 per ounce.
Rock Creek	0. 857	Sold for \$16.50 to \$16.75 per ounce.
Trail Creek	0. 850	

TABLE XL.—*Specimen examples of placer gold*—Continued.

OREGON—Continued.

County and locality.	Fineness in gold.	Remarks.
JACKSON.		
Applegate	0.850	
Ashland	0.846	
Coyote Creek	0.895—0.930	
Dry Diggings	0.975	
Fort Lane	0.870	Sold for \$16.25 per ounce.
Forty-nine	0.837	Sold for \$16.50 per ounce.
Grass Creek	0.875—0.900	
Jackass Creek	0.950	
Jacksonville	0.860	
Sam's Valley	0.825	
Sardine Creek	0.810—0.900	Sold for \$16.75 per ounce.
Sterling	0.826—0.908	
Uniontown	0.804—0.820	Sold for \$16.75 per ounce.
Wolf Creek	0.925	
JOSEPHINE.		
Althouse	0.865—0.875	Sold for \$16.50 per ounce.
Cañon Creek	0.900	Sold for \$17 per ounce.
Grass Creek	0.909—0.930	
Illinois	0.900	
Josephine	0.900	
Murphy	0.900	
Silver Creek	0.900	
Waldo	0.910—0.927	
Yank	0.967	
UMATILLA.		
Columbia River	0.740	Sold for \$15.30 per ounce.
WASCO.		
Ochoco	0.711	

From the same sources the following condensed abstract has been prepared, showing the average fineness in gold and silver of the placer yield of several States and Territories, with the number of specimen examples from which these averages are derived. The amount of base metal contained in the crude bullion varies from nothing to 0.020.

TABLE XLI.—*Average tenor of placer gold.*

State or Territory.	Number of examples.	Average fineness.	
		Gold.	Silver.
California	80	0.8836	0.1124
Colorado	9	0.8205	0.1755
Dakota	7	0.9235	0.0725
Georgia	10	0.9228	0.0732
Idaho	413	0.7806	0.2134
Montana	14	0.8951	0.1009
Oregon	77	0.8727	0.1233
Total	610		

From eighty examples of California placer dust and bullion an average fineness of 0.8836 is derived, a proportion slightly in excess of that stated in Dana's "Mineralogy," where the fineness is quoted at 0.875 to 0.885, or an average of 0.880. It is possible that the census average is a trifle too high, owing to the natural tendency of producers to overesti-

mate the fineness of their gold ; but the slight difference between it and the figures given by Dana would not materially affect the general result.

The average for Idaho is of 413 lots of placer gold from Boisé basin, a district producing three-fourths of the total for the Territory. This gold is of less fineness than that obtained in several other localities in Idaho, but the average stated will hold as a close approximation for the total.

There are three methods of obtaining from these data an average for the United States—neither of which is quite free from defects.

If the sum of the figures representing the average gold fineness for the several States and Territories be divided by seven, the number of the States and Territories from which reliable data as to fineness are obtainable, the quotient is 0.871257, which may be described as an average of geographical distribution. This, however, does not represent the average fineness of the whole actual amount produced, for by this method each State and Territory is taken as an equal member in the calculation, without regard to the large difference in their several products. Thus, Georgia, with a product of \$66,863, has as much weight in influencing the general average as California with a placer yield of \$8,580,989, or 128 times as large.

Another mode is to give each individual example equal weight, disregarding territorial limits. Dividing the sum of fineness in gold of 610 specimen examples, 495,887, by 610, an average of 0.8129 is obtained. This gives a true average for the number of cases in which the fineness is definitely given in the schedules, but represents neither the average according to geographical distribution nor that of the whole product. In this way California, with a placer product nine and three-fourths times greater than that of Idaho, is largely overweighted by the latter, owing to the preponderance of examples furnished by Idaho in the census returns. The result is evidently too low.

The third and preferable method is to multiply the average fineness for each State and Territory by the coefficient of the several yields, and then divide the sum of the products so obtained by the sum of the coefficients. This gives each not an equal but a just weight. The result is the average fineness of the total product without reference to the producing source. This principle is thus applied :

State or Territory.	Average fineness in gold.		Yield of placer gold in millions of dollars.		Resultants.
California	0.8836	×	8.581	=	7.5821716
Colorado	0.8205	×	0.102	=	0.0836910
Dakota	0.9235	×	0.051	=	0.0470985
Georgia	0.9228	×	0.067	=	0.0618276
Idaho	0.7806	×	0.880	=	0.6869280
Montana	0.8951	×	1.163	=	1.0410013
Oregon	0.8727	×	0.926	=	0.8081202
			11.770		10.3108382
Total average gold fineness = $\frac{10.3108382}{11.770} = 0.87602$					

The proportionate contents in silver and in base metal are similarly ascertained. By using the figures representing the average tenor of the placer gold for each of the States and Territories for which reliable data are obtainable, and assuming the general average deduced from them for the cases in which the returns are defective, the probable total silver contents may readily be calculated. It is found that the 580,766.6 ounces of fine gold were associated with 80,177.3 ounces of fine silver and 2,753.2 ounces of base metal, making the total weight of the crude placer gold 663,697.1 ounces. In mint value the silver contents were worth only \$103,661 as against \$12,005,524 for the gold. Thus while the ratio of silver to gold products was 1:7.2437 in weight, it was only 1:115.8153 in assay value. At the market rates the value of this placer silver, if any account were taken of it, would be considerably less, or a ratio of about 1:131. The loss to the miners in the price paid for the actual gold contents of the placer dust, when sold in small quantities to local dealers, is so much greater than the whole value of the silver contents, that the latter does not appear to them a matter of any consequence. The amount of silver alloyed with the placer gold of the several States and Territories is shown in the accompanying table:

TABLE XLII.—*Contents and mint value of crude placer gold.*

State or Territory.	Contents of placer gold.				Mint value.		
	Fine gold.	Fine silver.	Base metal.	Total crude metal.	Gold.	Silver.	Total.
	Ounces.	Ounces.	Ounces.	Ounces.	Dollars.	Dollars.	Dollars.
Alaska	287.9	*39.4	1.3	328.6	5,951	*51	6,002
Arizona	*1,451.2	*198.8	*6.6	*1,656.6	*30,000	*257	*30,257
California	415,105.0	52,804.2	1,879.1	469,788.3	8,580,989	68,271	8,649,260
Colorado	4,921.9	1,052.8	24.0	5,998.6	101,745	1,361	103,106
Dakota	2,460.3	193.1	0.2	2,653.6	50,859	250	51,109
Georgia	3,234.5	256.6	14.0	3,505.1	66,863	332	67,195
Idaho	42,552.8	11,633.1	327.1	54,512.9	879,645	15,040	894,685
Montana	56,255.6	6,341.4	251.4	62,848.4	1,162,908	8,199	1,171,107
Nevada	*2,418.7	*331.3	*11.0	*2,761.1	*50,000	*428	*50,428
North Carolina	*226.7	*31.0	*1.0	*258.8	*4,687	*40	*4,727
Oregon	44,811.5	6,331.2	205.4	51,348.1	926,336	8,186	934,522
South Carolina	316.4	*43.3	*1.4	*361.2	6,541	*56	*6,597
Utah	967.5	*132.5	*4.4	*1,104.4	20,000	*171	*20,171
Washington	5,756.6	*788.6	*26.3	*6,571.4	119,000	*1,019	*120,019
Total	580,766.6	80,177.3	2,753.2	663,697.1	12,005,524	103,661	12,109,185

* Estimated.

RÉSUMÉ OF PRODUCTION STATISTICS.

The total product of each State and Territory, including the yield of the deep mines from ore which was raised prior to, but reduced during, the census year, and also the silver contents of placer gold, appears in the complete exhibit contained in the following table, which shows the

aggregate bullion output of the United States for the year ending May 31, 1880:

TABLE XLIII.—*Production by geographical divisions.*

PACIFIC DIVISION.

State or Territory.	Product.		
	Gold.	Silver.	Total.
Alaska	\$5,951	\$51	\$6,002
Arizona	211,966	2,325,826	2,537,792
California	17,150,934	1,150,886	18,301,840
Idaho	1,479,655	464,550	1,944,205
Nevada	4,888,247	12,430,666	17,318,913
Oregon	1,097,700	27,793	1,125,493
Utah	291,555	4,743,090	5,034,645
Washington	135,800	1,019	136,819
Total	25,261,828	21,143,881	46,405,709

DIVISION OF THE ROCKY MOUNTAINS.

Colorado	\$2,699,900	\$16,549,274	\$19,249,174
Dakota	3,305,846	70,813	3,376,659
Montana	1,805,768	2,905,066	4,710,834
New Mexico	49,354	392,337	441,691
Wyoming	17,321	.....	17,321
Total	7,878,189	19,917,490	27,795,679

EASTERN DIVISION.

Alabama	\$1,300	.....	\$1,300
Georgia	81,030	\$332	81,362
Maine	3,000	7,200	10,200
Michigan .....	.....	25,858	25,858
New Hampshire	11,000	16,000	27,000
North Carolina	118,955	140	119,095
South Carolina	13,041	56	13,097
Tennessee	1,998	.....	1,998
Virginia	9,322	.....	9,322
Total	239,646	49,586	289,232

SUMMARY.

Pacific Division	\$25,261,828	\$21,143,881	\$46,405,709
Division of the Rocky Mountains	7,878,189	19,917,490	27,795,679
Eastern Division	239,646	49,586	289,232
Total	33,379,663	41,110,957	74,490,620

The relative quota contributed by each of the three great arbitrary divisions into which the country has been apportioned is indicated in the foregoing abstract, from which it will be seen that the Pacific division furnished 75.68 per cent. of the gold, 51.43 per cent. of the silver, and 62.43 per cent. of the total. The division of the Rocky Mountains yields 23.60 per cent. of the gold, 48.45 per cent. of the silver, and 37.18 per cent. of the total. The product of the Eastern division represents 0.72 per cent. of the gold, 0.12 per cent. of the silver, and 0.39 per cent. of the total.

The bullion product of the deep mines of the United States for the year under review amounted to 35 tons 900 pounds avoirdupois (1,033,973.1 ounces troy) of fine gold, and 1,087 tons 900 pounds avoirdupois (31,717,299 ounces troy) of fine silver. That of the placer mines weighed 19 tons 1,824 pounds avoirdupois (580,766.6 ounces troy) in fine gold, with which were alloyed 2 tons 1,498 pounds avoirdupois (80,177 ounces troy) of silver. The total weight of fine bullion was no less than 55 tons 724 pounds avoirdupois (1,614,739.7 ounces troy) of gold, and 1,090 tons 398 pounds avoirdupois (31,797,476 ounces troy) of silver. These huge figures may be better grasped, perhaps, by considering that the gold represents five ordinary car-loads, while a train of 109 freight cars of the usual capacity would be required to transport the silver. Historians have stated that during the early Spanish occupation whole galleons were freighted exclusively with silver from the mines of Mexico and Peru. This would hardly seem to be an exaggeration, in view of the fact that the present annual product of the United States would suffice to form the full cargo of a large modern vessel.

COMPARISONS.

The relative proportion of placer gold to that produced by the deep mines; the percentage in each class of product of the precious metals from the several mining regions of the United States; the average yield per square mile and per capita in different localities, and the rank of the States and Territories in productiveness, are indicated in the following exhibits:

TABLE XLIV.—Percentage of placer gold and gold from deep mines in total gold product.

State or Territory.	Placer mines.	Deep mines.
Alabama.....		100.00
Alaska.....	100.00	
Arizona.....	14.16	85.84
California.....	50.03	49.97
Colorado.....	3.77	96.23
Dakota.....	1.54	98.46
Georgia.....	82.51	17.49
Idaho.....	59.42	40.58
Maine.....		100.00
Montana.....	61.40	38.60
Nevada.....	1.02	98.98
New Hampshire.....		100.00
New Mexico.....		100.00
North Carolina.....	3.94	96.06
Oregon.....	84.39	15.61
South Carolina.....	50.16	49.84
Tennessee.....		100.00
Utah.....	6.86	93.14
Virginia.....		100.00
Washington.....	87.63	12.37
Wyoming.....		100.00
United States (including Alaska).....	35.97	64.03

TABLE XLV.—*Relative production of the States and Territories.*

State or Territory.	Gold.			Silver.	Total.
	Placer mines.	Deep mines.	Total gold.		
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Alabama.....		0.01	0.01		
Alaska.....	0.05		0.02		
Arizona.....	0.25	0.85	0.63	5.66	3.40
California.....	71.47	40.09	51.38	2.80	24.70
Colorado.....	0.85	12.16	8.09	40.25	25.85
Dakota.....	0.42	15.23	9.90	0.17	4.52
Georgia.....	0.56	0.07	0.24		0.10
Idaho.....	7.32	2.81	4.43	1.13	2.60
Maine.....		0.01	0.01	0.02	0.01
Michigan.....				0.06	0.03
Montana.....	9.68	3.01	5.41	7.07	6.32
Nevada.....	0.41	22.64	14.64	30.24	23.24
New Hampshire.....		0.05	0.03	0.04	0.03
New Mexico.....		0.23	0.15	0.95	0.59
North Carolina.....	0.04	0.53	0.36		0.15
Oregon.....	7.75	0.80	3.29	0.07	1.49
South Carolina.....	0.05	0.03	0.04		0.01
Tennessee.....		0.01	0.01		
Utah.....	0.16	1.27	0.87	11.54	6.75
Virginia.....		0.04	0.03		0.01
Washington.....	0.99	0.08	0.41		0.18
Wyoming.....		0.08	0.05		0.02
Total.....	100.00	100.00	100.00	100.00	100.00

TABLE XLVI.—*Average product per square mile for the year ending May 31, 1880.*

States and Territories.	Gold.	Silver.	Total.
Alabama.....	\$0.02		\$0.02
Alaska.....	.01		.01
Arizona.....	1.87	\$20.58	22.45
California.....	108.30	6.84	115.14
Colorado.....	25.98	159.22	185.20
Dakota.....	22.17	.48	22.65
Georgia.....	1.36		1.36
Idaho.....	17.45	5.30	22.75
Maine.....	.09	.22	.31
Michigan.....		.44	.44
Montana.....	12.36	19.83	32.19
Nevada.....	44.16	112.29	156.45
New Hampshire.....	1.18	1.72	2.90
New Mexico.....	.40	3.20	3.60
North Carolina.....	2.28	.002	2.282
Oregon.....	11.43	.20	11.63
South Carolina.....	.43		.43
Tennessee.....	.05		.05
Utah.....	3.43	55.82	59.25
Virginia.....	.22		.22
Washington.....	1.96		1.96
Wyoming.....	.18		.18
United States (including Alaska).....	9.31	11.44	20.75
United States (not including Alaska).....	11.03	13.55	24.58
United States (including only the States and Territories producing gold and silver, with Alaska).....	14.68	18.02	32.70
United States (including only the States and Territories producing gold and silver, and not including Alaska).....	19.44	23.88	43.32
Average for Colorado, California, Nevada, Utah, Montana, Dakota, Arizona, and Idaho.....	33.47	42.64	76.11

TABLE XLVII.—Average product per capita for the year ending May 31, 1880.

States and Territories.	Gold.	Silver.	Total.
Alabama.....	\$0.001	.....	\$0.001
Alaska.....	.20	.....	.20
Arizona.....	5.24	\$57.51	62.75
California.....	19.84	1.25	21.09
Colorado.....	13.89	85.16	99.05
Dakota.....	24.46	.52	24.98
Georgia.....	.05	.....	.05
Idaho.....	45.38	13.78	59.16
Maine.....	.005	.011	.016
Michigan.....	.....	.02	.02
Montana.....	46.11	73.98	120.09
Nevada.....	78.51	199.63	278.14
New Hampshire.....	.03	.05	.08
New Mexico.....	.41	3.28	3.69
North Carolina.....	.08	.00007	.08
Oregon.....	6.28	.11	6.39
South Carolina.....	.01	.....	.01
Tennessee.....	.001	.....	.001
Utah.....	2.03	32.94	34.97
Virginia.....	.006	.....	.006
Washington.....	1.81	.....	1.81
Wyoming.....	.83	.....	.83
United States (including Alaska).....	.66	.82	1.48
United States (not including Alaska).....	.66	.82	1.48
United States (including only the States and Territories produc- ing gold and silver, with Alaska).....	2.60	3.20	5.80
United States (including only the States and Territories produc- ing gold and silver, and not including Alaska).....	2.61	3.21	5.82
Average for Colorado, California, Nevada, Utah, Montana, Da- kota, Arizona, and Idaho.....	21.05	26.80	47.85

TABLE XLVIII.—Rank of the States and Territories in actual product, for the year ending May 31, 1880.

Gold.	Silver.	Total.
1. California.....	1. Colorado.....	1. Colorado.
2. Nevada.....	2. Nevada.....	2. California.
3. Dakota.....	3. Utah.....	3. Nevada.
4. Colorado.....	4. Montana.....	4. Utah.
5. Montana.....	5. Arizona.....	5. Montana.
6. Idaho.....	6. California.....	6. Dakota.
7. Oregon.....	7. Idaho.....	7. Arizona.
8. Utah.....	8. New Mexico.....	8. Idaho.
9. Arizona.....	9. Dakota.....	9. Oregon.
10. Washington.....	10. Michigan.....	10. New Mexico.
11. North Carolina.....	11. Oregon.....	11. Washington.
12. Georgia.....	12. New Hampshire.....	12. North Carolina.
13. New Mexico.....	13. Maine.....	13. Georgia.
14. Wyoming.....	.....	14. New Hampshire.
15. South Carolina.....	.....	15. Michigan.
16. New Hampshire.....	.....	16. Wyoming.
17. Virginia.....	.....	17. South Carolina.
18. Alaska.....	.....	18. Maine.
19. Maine.....	.....	19. Virginia.
20. Tennessee.....	.....	20. Alaska.
21. Alabama.....	.....	21. Tennessee.
.....	.....	22. Alabama.

TABLE XLIX.—*Rank of the States and Territories in product per square mile, for the year ending May 31, 1880.*

Gold.	Silver.	Total.
1. California.....	1. Colorado.....	1. Colorado.
2. Nevada.....	2. Nevada.....	2. Nevada.
3. Colorado.....	3. Utah.....	3. California.
4. Dakota.....	4. Arizona.....	4. Utah.
5. Idaho.....	5. Montana.....	5. Montana.
6. Montana.....	6. California.....	6. Idaho.
7. Oregon.....	7. Idaho.....	7. Dakota.
8. Utah.....	8. New Mexico.....	8. Arizona.
9. North Carolina.....	9. Dakota.....	9. Oregon.
10. Washington.....	10. Michigan.....	10. New Mexico.
11. Arizona.....	11. Maine.....	11. New Hampshire.
12. Georgia.....	12. Oregon.....	12. North Carolina.
13. New Hampshire.....	13. North Carolina.....	13. Washington.
14. South Carolina.....		14. Georgia.
15. New Mexico.....		15. Michigan.
16. Virginia.....		16. South Carolina.
17. Wyoming.....		17. Maine.
18. Maine.....		18. Virginia.
19. Tennessee.....		19. Wyoming.
20. Alabama.....		20. Tennessee.
21. Alaska.....		21. Alabama.
		22. Alaska.

TABLE L.—*Rank of the States and Territories in product per capita, for the year ending May 31, 1880.*

Gold.	Silver.	Total.
1. Nevada.....	1. Nevada.....	1. Nevada.
2. Montana.....	2. Colorado.....	2. Montana.
3. Idaho.....	3. Montana.....	3. Colorado.
4. Dakota.....	4. Arizona.....	4. Arizona.
5. California.....	5. Utah.....	5. Idaho.
6. Colorado.....	6. Idaho.....	6. Utah.
7. Oregon.....	7. New Mexico.....	7. Dakota.
8. Arizona.....	8. California.....	8. California.
9. Utah.....	9. Dakota.....	9. Oregon.
10. Washington.....	10. Oregon.....	10. New Mexico.
11. Wyoming.....	11. New Hampshire.....	11. Washington.
12. New Mexico.....	12. Michigan.....	12. Wyoming.
13. Alaska.....	13. Maine.....	13. Alaska.
14. North Carolina.....		14. North Carolina.
15. Georgia.....		15. New Hampshire.
16. New Hampshire.....		16. Georgia.
17. South Carolina.....		17. Michigan.
18. Virginia.....		18. Maine.
19. Maine.....		19. South Carolina.
20. Tennessee.....		20. Tennessee.
21. Alabama.....		21. Virginia.
		22. Alabama.

PRODUCTION UNACCOUNTED FOR IN THE PRECEDING TABLES.

In addition to the returns received directly from the mines, there are several minor points to be included in the total yield. A larger item than it is usually considered to be is the annual hoarding of rich specimens. This is not accounted for in the mine production as reported. While it is impossible to state the actual amount thus absorbed with any degree of precision, a careful estimate would place the value of the gold nuggets and ore annually added to the cabinets of collectors at not less than \$150,000, and that of the silver ore at about \$50,000. This, in view of the great number of mineral collections maintained throughout the mining territory, is certainly not an overestimate.

There is also quite an extensive manufacture of gold quartz into jewelry and souvenirs, particularly in San Francisco. The value so absorbed does not probably fall short of \$50,000 annually. In 1870 the United States mining commissioner estimated the amount of gold hoarded as specimens or worked up by local jewelers at \$400,000. The same authority, at that period, estimated the annual loss of gold-dust in handling as currency at \$100,000. As the practice of using dust for money has almost disappeared, the amount so lost is now very small.

Another indefinite quantity is the value of precious metal lost in melting, in assay grains, etc. Summing up the estimates for these additional items, the following result is reached:

TABLE LI.—*Production unaccounted for in tabulation.*

	Gold.	Silver.	Total.
Bullion product shown in preceding tables	\$33,379,663	\$41,110,957	\$74,490,620
Estimated value of specimens hoarded	150,000	50,000	200,000
Estimated value of gold quartz made into jewelry and souvenirs..	50,000	.....	50,000
Estimated value of gold-dust lost in handling as currency.....	10,000	.....	10,000
Estimated loss in melting and assaying, assay grains, etc.....	20,000	10,000	30,000
Total.....	33,609,663	41,170,957	74,780,620

ASSAY VALUE OF FINE BULLION.

For convenience in referring to the dual series of troy weights of fine bullion and their equivalent assay values, the following conversion tables, which were prepared for use in tabulating the census statistics of production, are here appended:

TABLE LII.—*Conversion of Troy ounces of fine metal into United States money.*

GOLD.

1 ounce Troy = \$20.671834. 1 dollar = 0.048374957925 ounce Troy.

Ounces.	Dollars.	Ounces.	Dollars.	Ounces.	Dollars.	Ounces.	Dollars.
1	20.671834	51	1,054.263534	100	2,067.1834	5,100	105,426.3534
2	41.343668	52	1,074.935368	200	4,134.3668	5,200	107,493.5368
3	62.015502	53	1,095.607202	300	6,201.5502	5,300	109,560.7202
4	82.687336	54	1,116.279036	400	8,268.7336	5,400	111,627.9036
5	103.359170	55	1,136.950870	500	10,335.9170	5,500	113,695.0870
6	124.031004	56	1,157.622704	600	12,403.1004	5,600	115,762.2704
7	144.702838	57	1,178.294538	700	14,470.2838	5,700	117,829.4538
8	165.374672	58	1,198.966372	800	16,537.4672	5,800	119,896.6372
9	186.046506	59	1,219.638206	900	18,604.6506	5,900	121,963.8206
10	206.718340	60	1,240.310040	1,000	20,671.8340	6,000	124,031.0040
11	227.390174	61	1,260.981874	1,100	22,739.0174	6,100	126,098.1874
12	248.062008	62	1,281.653708	1,200	24,806.2008	6,200	128,165.3708
13	268.733842	63	1,302.325542	1,300	26,873.3842	6,300	130,232.5542
14	289.405676	64	1,322.997376	1,400	28,940.5676	6,400	132,299.7376
15	310.077510	65	1,343.669210	1,500	31,007.7510	6,500	134,366.9210
16	330.749344	66	1,364.341044	1,600	33,074.9344	6,600	136,434.1044
17	351.421178	67	1,385.012878	1,700	35,142.1178	6,700	138,501.2878
18	372.093012	68	1,405.684712	1,800	37,209.3012	6,800	140,568.4712
19	392.764846	69	1,426.356546	1,900	39,276.4846	6,900	142,635.6546
20	413.436680	70	1,447.028380	2,000	41,343.6680	7,000	144,702.8380
21	434.108514	71	1,467.700214	2,100	43,410.8514	7,100	146,770.0214
22	454.780348	72	1,488.372048	2,200	45,478.0348	7,200	148,837.2048
23	475.452182	73	1,509.043882	2,300	47,545.2182	7,300	150,904.3882
24	496.124016	74	1,529.715716	2,400	49,612.4016	7,400	152,971.5716
25	516.795850	75	1,550.387550	2,500	51,679.5850	7,500	155,038.7550
26	537.467684	76	1,571.059384	2,600	53,746.7684	7,600	157,105.9384
27	558.139518	77	1,591.731218	2,700	55,813.9518	7,700	159,173.1218
28	578.811352	78	1,612.403052	2,800	57,881.1352	7,800	161,240.3052
29	599.483186	79	1,633.074886	2,900	59,948.3186	7,900	163,307.4886
30	620.155020	80	1,653.746720	3,000	62,015.5020	8,000	165,374.6720
31	640.826854	81	1,674.418554	3,100	64,082.6854	8,100	167,441.8554
32	661.498688	82	1,695.090388	3,200	66,149.8688	8,200	169,509.0388
33	682.170522	83	1,715.762222	3,300	68,217.0522	8,300	171,576.2222
34	702.842356	84	1,736.434056	3,400	70,284.2356	8,400	173,643.4056
35	723.514190	85	1,757.105890	3,500	72,351.4190	8,500	175,710.5890
36	744.186024	86	1,777.777724	3,600	74,418.6024	8,600	177,777.7724
37	764.857858	87	1,798.449558	3,700	76,485.7858	8,700	179,844.9558
38	785.529692	88	1,819.121392	3,800	78,552.9692	8,800	181,912.1392
39	806.201526	89	1,839.793226	3,900	80,620.1526	8,900	183,979.3226
40	826.873360	90	1,860.465060	4,000	82,687.3360	9,000	186,046.5060
41	847.545194	91	1,881.136894	4,100	84,754.5194	9,100	188,113.6894
42	868.217028	92	1,901.808728	4,200	86,821.7028	9,200	190,180.8728
43	888.888862	93	1,922.480562	4,300	88,888.8862	9,300	192,248.0562
44	909.560696	94	1,943.152396	4,400	90,956.0696	9,400	194,315.2396
45	930.232530	95	1,963.824230	4,500	93,023.2530	9,500	196,382.4230
46	950.904364	96	1,984.496064	4,600	95,090.4364	9,600	198,449.6064
47	971.576198	97	2,005.167898	4,700	97,157.6198	9,700	200,516.7898
48	992.248032	98	2,025.839732	4,800	99,224.8032	9,800	202,583.9732
49	1,012.919866	99	2,046.511566	4,900	101,291.9866	9,900	204,651.1566
50	1,033.591700	100	2,067.183400	5,000	103,359.1700	10,000	206,718.3400

TABLE LII.—Conversion of Troy ounces of fine metal into United States money—Continued.

SILVER.

1 ounce Troy = \$1.2929. 1 dollar = 0.773455023513 ounce Troy.

Ounces.	Dollars.	Ounces.	Dollars.	Ounces.	Dollars.	Ounces.	Dollars.
1	1.2929	51	65.9379	100	129.29	5,100	6,593.79
2	2.5858	52	67.2308	200	258.58	5,200	6,723.08
3	3.8787	53	68.5237	300	387.87	5,300	6,852.37
4	5.1716	54	69.8166	400	517.16	5,400	6,981.66
5	6.4645	55	71.1095	500	646.45	5,500	7,110.95
6	7.7574	56	72.4024	600	775.74	5,600	7,240.24
7	9.0503	57	73.6953	700	905.03	5,700	7,369.53
8	10.3432	58	74.9882	800	1,034.32	5,800	7,498.82
9	11.6361	59	76.2811	900	1,163.61	5,900	7,628.11
10	12.9290	60	77.5740	1,000	1,292.90	6,000	7,757.40
11	14.2219	61	78.8669	1,100	1,422.19	6,100	7,886.69
12	15.5148	62	80.1598	1,200	1,551.48	6,200	8,015.98
13	16.8077	63	81.4527	1,300	1,680.77	6,300	8,145.27
14	18.1006	64	82.7456	1,400	1,810.06	6,400	8,274.56
15	19.3935	65	84.0385	1,500	1,939.35	6,500	8,403.85
16	20.6864	66	85.3314	1,600	2,068.64	6,600	8,533.14
17	21.9793	67	86.6243	1,700	2,197.93	6,700	8,662.43
18	23.2722	68	87.9172	1,800	2,327.22	6,800	8,791.72
19	24.5651	69	89.2101	1,900	2,456.51	6,900	8,921.01
20	25.8580	70	90.5030	2,000	2,585.80	7,000	9,050.30
21	27.1509	71	91.7959	2,100	2,715.09	7,100	9,179.59
22	28.4438	72	93.0888	2,200	2,844.38	7,200	9,308.88
23	29.7367	73	94.3817	2,300	2,973.67	7,300	9,438.17
24	31.0296	74	95.6746	2,400	3,102.96	7,400	9,567.46
25	32.3225	75	96.9675	2,500	3,232.25	7,500	9,696.75
26	33.6154	76	98.2604	2,600	3,361.54	7,600	9,826.04
27	34.9083	77	99.5533	2,700	3,490.83	7,700	9,955.33
28	36.2012	78	100.8462	2,800	3,620.12	7,800	10,084.62
29	37.4941	79	102.1391	2,900	3,749.41	7,900	10,213.91
30	38.7870	80	103.4320	3,000	3,878.70	8,000	10,343.20
31	40.0799	81	104.7249	3,100	4,007.99	8,100	10,472.49
32	41.3728	82	106.0178	3,200	4,137.28	8,200	10,601.78
33	42.6657	83	107.3107	3,300	4,266.57	8,300	10,731.07
34	43.9586	84	108.6036	3,400	4,395.86	8,400	10,860.36
35	45.2515	85	109.8965	3,500	4,525.15	8,500	10,989.65
36	46.5444	86	111.1894	3,600	4,654.44	8,600	11,118.94
37	47.8373	87	112.4823	3,700	4,783.73	8,700	11,248.23
38	49.1302	88	113.7752	3,800	4,913.02	8,800	11,377.52
39	50.4231	89	115.0681	3,900	5,042.31	8,900	11,506.81
40	51.7160	90	116.3610	4,000	5,171.60	9,000	11,636.10
41	53.0089	91	117.6539	4,100	5,300.89	9,100	11,765.39
42	54.3018	92	118.9468	4,200	5,430.18	9,200	11,894.68
43	55.5947	93	120.2397	4,300	5,559.47	9,300	12,023.97
44	56.8876	94	121.5326	4,400	5,688.76	9,400	12,153.26
45	58.1805	95	122.8255	4,500	5,818.05	9,500	12,282.55
46	59.4734	96	124.1184	4,600	5,947.34	9,600	12,411.84
47	60.7663	97	125.4113	4,700	6,076.63	9,700	12,541.13
48	62.0592	98	126.7042	4,800	6,205.92	9,800	12,670.42
49	63.3521	99	127.9971	4,900	6,335.21	9,900	12,799.71
50	64.6450	100	129.2900	5,000	6,464.50	10,000	12,929.00

TABLE LIII.—*Conversion of United States money into Troy ounces of fine metal.*

GOLD.

1 dollar = 0.048374957925 ounce Troy. 1 ounce Troy = \$20.671834.

Dollars.	Ounces.	Dollars.	Ounces.	Dollars.	Ounces.	Dollars.	Ounces.
1	0.048375	51	2.467123	100	4.837496	5,100	246.712285
2	0.096750	52	2.515498	200	9.674992	5,200	251.549781
3	0.145125	53	2.563873	300	14.512487	5,300	256.387277
4	0.193500	54	2.612248	400	19.349983	5,400	261.224773
5	0.241875	55	2.660623	500	24.187479	5,500	266.062269
6	0.290250	56	2.708998	600	29.024975	5,600	270.899764
7	0.338625	57	2.757373	700	33.862471	5,700	275.737260
8	0.387000	58	2.805748	800	38.699966	5,800	280.574756
9	0.435375	59	2.854123	900	43.537462	5,900	285.412252
10	0.483750	60	2.902497	1,000	48.374958	6,000	290.249748
11	0.532125	61	2.950872	1,100	53.212454	6,100	295.087243
12	0.580499	62	2.999247	1,200	58.049950	6,200	299.924739
13	0.628874	63	3.047622	1,300	62.887445	6,300	304.762235
14	0.677249	64	3.095997	1,400	67.724941	6,400	309.599731
15	0.725624	65	3.144372	1,500	72.562437	6,500	314.437227
16	0.773999	66	3.192747	1,600	77.399933	6,600	319.274722
17	0.822374	67	3.241122	1,700	82.237428	6,700	324.112218
18	0.870749	68	3.289497	1,800	87.074924	6,800	328.949714
19	0.919124	69	3.337872	1,900	91.912420	6,900	333.787210
20	0.967499	70	3.386247	2,000	96.749916	7,000	338.624705
21	1.015874	71	3.434622	2,100	101.587412	7,100	343.462201
22	1.064249	72	3.482997	2,200	106.424907	7,200	348.299697
23	1.112624	73	3.531372	2,300	111.262403	7,300	353.137193
24	1.160999	74	3.579747	2,400	116.099899	7,400	357.974689
25	1.209374	75	3.628122	2,500	120.937395	7,500	362.812184
26	1.257749	76	3.676497	2,600	125.774891	7,600	367.649680
27	1.306124	77	3.724872	2,700	130.612386	7,700	372.487176
28	1.354499	78	3.773247	2,800	135.449882	7,800	377.324672
29	1.402874	79	3.821622	2,900	140.287378	7,900	382.162168
30	1.451249	80	3.869997	3,000	145.124874	8,000	387.999663
31	1.499624	81	3.918372	3,100	149.962370	8,100	391.837159
32	1.547999	82	3.966747	3,200	154.799865	8,200	396.674655
33	1.596374	83	4.015122	3,300	159.637361	8,300	401.512151
34	1.644749	84	4.063496	3,400	164.474857	8,400	406.349647
35	1.693124	85	4.111871	3,500	169.312353	8,500	411.187142
36	1.741498	86	4.160246	3,600	174.149849	8,600	416.024638
37	1.789873	87	4.208621	3,700	178.987344	8,700	420.862134
38	1.838248	88	4.256996	3,800	183.824840	8,800	425.699630
39	1.886623	89	4.305371	3,900	188.662336	8,900	430.537126
40	1.934998	90	4.353746	4,000	193.499832	9,000	435.374621
41	1.983373	91	4.402121	4,100	198.337327	9,100	440.212117
42	2.031748	92	4.450496	4,200	203.174823	9,200	445.049613
43	2.080123	93	4.498871	4,300	208.012319	9,300	449.887109
44	2.128498	94	4.547246	4,400	212.849815	9,400	454.724604
45	2.176873	95	4.595621	4,500	217.687311	9,500	459.562100
46	2.225248	96	4.643996	4,600	222.524806	9,600	464.399596
47	2.273623	97	4.692371	4,700	227.362302	9,700	469.237092
48	2.321998	98	4.740746	4,800	232.199798	9,800	474.074588
49	2.370373	99	4.789121	4,900	237.037294	9,900	478.912083
50	2.418748	100	4.837496	5,000	241.874790	10,000	483.749579

TABLE LIII.—*Conversion of United States money into Troy ounces of fine metal—Cont'd.*

SILVER.

1 dollar = 0.773455023513 Troy ounce. 1 ounce Troy = \$1.2929.

Dollars.	Ounces.	Dollars.	Ounces.	Dollars.	Ounces.	Dollars.	Ounces.
1	0.77346	51	39.44621	100	77.34550	5,100	3,944.62062
2	1.54691	52	40.21966	200	154.69100	5,200	4,021.96612
3	2.32037	53	40.99312	300	232.03651	5,300	4,099.31162
4	3.09382	54	41.76657	400	309.38201	5,400	4,176.65713
5	3.86728	55	42.54003	500	386.72751	5,500	4,254.00263
6	4.64073	56	43.31348	600	464.07301	5,600	4,331.34813
7	5.41419	57	44.08694	700	541.41852	5,700	4,408.69363
8	6.18764	58	44.86039	800	618.76402	5,800	4,486.03914
9	6.96110	59	45.63385	900	696.10952	5,900	4,563.38464
10	7.73455	60	46.40730	1,000	773.45502	6,000	4,640.73014
11	8.50801	61	47.18076	1,100	850.80053	6,100	4,718.07564
12	9.28146	62	47.95421	1,200	928.14603	6,200	4,795.42115
13	10.05492	63	48.72767	1,300	1,005.49153	6,300	4,872.76665
14	10.82837	64	49.50112	1,400	1,082.83703	6,400	4,950.11215
15	11.60183	65	50.27458	1,500	1,160.18254	6,500	5,027.45765
16	12.37528	66	51.04803	1,600	1,237.52804	6,600	5,104.80316
17	13.14874	67	51.82149	1,700	1,314.87354	6,700	5,182.14866
18	13.92219	68	52.59494	1,800	1,392.21904	6,800	5,259.49416
19	14.69565	69	53.36840	1,900	1,469.56454	6,900	5,336.83966
20	15.46910	70	54.14185	2,000	1,546.91005	7,000	5,414.18516
21	16.24256	71	54.91531	2,100	1,624.25555	7,100	5,491.53067
22	17.01601	72	55.68876	2,200	1,701.60105	7,200	5,568.87617
23	17.78947	73	56.46222	2,300	1,778.94655	7,300	5,646.22167
24	18.56292	74	57.23567	2,400	1,856.29206	7,400	5,723.56717
25	19.33638	75	58.00913	2,500	1,933.63756	7,500	5,800.91268
26	20.10983	76	58.78258	2,600	2,010.98306	7,600	5,878.25818
27	20.88329	77	59.55604	2,700	2,088.32856	7,700	5,955.60368
28	21.65674	78	60.32949	2,800	2,165.67407	7,800	6,032.94918
29	22.43020	79	61.10295	2,900	2,243.01957	7,900	6,110.29469
30	23.20365	80	61.87640	3,000	2,320.36507	8,000	6,187.64019
31	23.97711	81	62.64986	3,100	2,397.71057	8,100	6,264.98569
32	24.75056	82	63.42331	3,200	2,475.05608	8,200	6,342.33119
33	25.52402	83	64.19677	3,300	2,552.40158	8,300	6,419.67670
34	26.29747	84	64.97022	3,400	2,629.74708	8,400	6,497.02220
35	27.07093	85	65.74368	3,500	2,707.09258	8,500	6,574.36770
36	27.84438	86	66.51713	3,600	2,784.43808	8,600	6,651.71320
37	28.61784	87	67.29059	3,700	2,861.78359	8,700	6,729.05870
38	29.39129	88	68.06404	3,800	2,939.12909	8,800	6,806.40421
39	30.16475	89	68.83750	3,900	3,016.47459	8,900	6,883.74971
40	30.93820	90	69.61095	4,000	3,093.82009	9,000	6,961.09521
41	31.71166	91	70.38441	4,100	3,171.16560	9,100	7,038.44071
42	32.48511	92	71.15786	4,200	3,248.51110	9,200	7,115.78622
43	33.25857	93	71.93132	4,300	3,325.85660	9,300	7,193.13172
44	34.03202	94	72.70477	4,400	3,403.20210	9,400	7,270.47722
45	34.80548	95	73.47823	4,500	3,480.54761	9,500	7,347.82272
46	35.57893	96	74.25168	4,600	3,557.89311	9,600	7,425.16823
47	36.35239	97	75.02514	4,700	3,635.23861	9,700	7,502.51373
48	37.12584	98	75.79859	4,800	3,712.58411	9,800	7,579.85923
49	37.89930	99	76.57205	4,900	3,789.92962	9,900	7,657.20473
50	38.67275	100	77.34550	5,000	3,867.27512	10,000	7,734.55024

DISCOUNT AND MARKET VALUE.

The figures given in the production tables are of assay values, and are therefore considerably higher than the actual market value. Disregarding express charges, commissions, and cost of refining and coining, there is still a large deduction to be made for this discount, in estimating the cash value of the bullion to the producers. Assuming the gold to have brought on the average \$20 per troy ounce, and the

silver \$1.12½ per troy ounce, the cash received would have been \$32,394,794 for the gold, \$35,772,160 for the silver, and \$68,166,954 total. The loss to the miners, as compared with the full assay value, would therefore have been \$984,869 on the gold, \$5,338,797 on the silver, and \$6,323,666 altogether, or about one thirty-fourth of the full gold coining value, over one-eighth of the nominal silver value, and over one-twelfth in all, during the single census year. While there is no regular discount on gold, the large amount of placer gold sold at an undervaluation renders the average price assumed a probable one. The price for the silver is an estimate of average local rates for the year.

THE OUTLOOK.

The immediate outlook for the precious metal mines, as a whole, is very encouraging. The great Leadville (Colorado), Eureka (Nevada), Tombstone (Arizona), and Bodie (California), districts are maintaining a steady output, while the new Wood River and other districts in Idaho, and a number of recent discoveries in Arizona, hold forth great promise for the future. In fact, estimates of the yield subsequent to the census period indicate an actual and considerable gain.*

FINAL DISPOSITION OF THE PRECIOUS METALS—COINAGE.

The receipts of bullion of domestic production at the United States assay offices, as previously explained, do not indicate the absolute amount of the mine output, but they serve as a useful check in many instances. The following tables are abstracts from the carefully collected statistics of the Treasury Department, selected with reference to their bearing upon the question of production :

TABLE LIV.—*Receipts of gold and silver of domestic production at the mints and United States assay offices during the fiscal year ending June 30, 1880.*

State or Territory.	Gold.	Silver.	Total.
	Dollars.	Dollars.	Dollars.
Alabama	752 79	.....	752 79
Alaska	5,950 90	.....	5,950 90
Arizona	158,919 75	991,323 38	1,150,243 13
California	7,118,816 42	303,846 91	7,422,663 33
Colorado	2,244,069 74	1,257,790 41	3,501,860 15
Dakota	2,750,022 09	21,104 54	2,771,126 63
Georgia	89,831 08	48 73	89,879 81
Idaho	510,546 73	102,999 86	613,546 59
Michigan (Lake Superior) .....	.....	129,686 94	129,686 94
Montana	1,805,768 00	1,262,982 32	3,068,750 32
Nevada	518,261 85	5,087,242 18	5,605,504 03
New Mexico	91,037 28	424,967 31	516,004 59
North Carolina	85,659 57	379 18	86,038 75
Oregon	583,365 34	1,174 26	584,539 60
South Carolina	11,861 70	15 52	11,877 22

* While this report was going through the press, Wells, Fargo & Co. reported the yield of the mines of the Western States and Territories, together with that from British Columbia, to have been \$31,869,686 gold, \$45,077,829 silver, and \$76,947,515 total, for the calendar year 1881.

TABLE LIV.—Receipts of gold and silver of domestic production, &c.—Continued.

State or Territory.	Gold.	Silver.	Total.
	Dollars.	Dollars.	Dollars.
Tennessee	1,998 30		1,998 30
Utah	27,029 19	627,703 85	654,733 04
Virginia	9,322 07		9,322 07
Washington	34,529 24		34,529 24
Wyoming	17,320 70		17,320 70
Refined bullion (gold)	18,161,943 52		18,161,943 52
Refined bullion (silver)		2,970,757 92	2,970,757 92
Parted from silver	1,449,524 54		1,449,524 54
Parted from gold		219,387 26	219,387 26
Contained in silver	1,161 47		1,161 47
Contained in gold		2,978 23	2,978 23
Other sources (gold)	144,013 13		144,013 13
Other sources (silver)		18,728,368 15	18,728,368 15
Total	35,821,705 40	32,132,756 95	67,954,462 35

The following tables show the amount of coinage executed during the fiscal year ending June 30, 1880, and the total coinage of the United States up to that date:

TABLE LV.—Coinage by the United States mints for the fiscal year ending June 30, 1880.

Metal.	Coinage executed.
Gold	\$56,157,735 00
Silver	27,942,437 50
Total gold and silver coinage	84,100,172 50
Minor coinage	269,971 50
Total coinage	84,370,144 00

TABLE LVI.—Total coinage by the United States mints from 1793 to close of fiscal year ending June 30, 1880.

Metal.	Coinage executed.
Gold	\$1,133,163,322 00
Silver	292,333,436 90
Total gold and silver coinage	1,425,436,758 90
Minor coinage	13,283,167 05
Total coinage	1,438,719,925 95

CONSUMPTION OF THE PRECIOUS METALS IN THE ARTS.

Besides the demand for coinage and export, the precious metals are subjected to a further and constant drain in the large annual consumption in the arts. Until quite recently it was impossible to ascertain the amount so absorbed with any degree of accuracy, though many attempts were made to this end by officials and statisticians. In 1870, estimates furnished by the large gold-refining houses and manufacturing jewelers showed that probably not less than \$9,000,000, and possibly over

\$13,000,000, of gold were used in the arts during that year. Out of this indefinite sum it was impossible to segregate the proportion of bullion of domestic production so consumed from the United States coin, foreign coin and bullion, and old articles remelted for manufacturing purposes.

Latterly fuller and more reliable data are available. A systematic investigation, conducted by the Director of the Mint, Hon. Horatio C. Burchard, has resulted in tracing this consumption with great accuracy. Records are now kept at the several mints and United States assay offices of the value of bars made and delivered by them for use in the arts and manufacturing. From these returns, supplemented by individual reports from a large proportion of the manufacturing establishments collected with much care, it is estimated that the amount of gold thus consumed in the United States in the fiscal year ending June 30, 1880, was \$10,000,000, and of silver \$5,000,000, or \$15,000,000 in all. Of this, \$5,500,000 gold and \$4,000,000 silver were of domestic bullion produced during the year, together with \$2,500,000 gold and \$600,000 silver United States coin. The remainder consisted of old manufactured articles and foreign coin remelted.

This large amount is absorbed mainly in the following principal industries: The manufacture of jewelry, plate, and plated ware, and articles of *vertu*; watch-case, gold pen, instrument, and spectacle making; dentistry; gilding; photography; and to a less extent in glass staining and in various chemical processes. In addition to the leading uses enumerated, there are many others, insignificant individually, but in the aggregate demanding a considerable supply of the precious metals.

OTHER ESTIMATES OF THE BULLION PRODUCT.

As a means of comparison, several independent estimates, derived from different sources of information and compiled upon widely diverse systems, are appended. They are:

1. Estimates of Dr. Adolf Soetbeer (as published in *Petermann's Mittheilungen*, Ergänzungsheft No. 57) of the product of the United States up to the close of 1875; kilograms being converted into troy ounces and German marks into United States money. The conclusions reached by Dr. Soetbeer were based upon an analytical study and comparison of the literature of the subject, and are generally accepted with confidence.

2. Estimates of Hon. Horatio C. Burchard, Director of the Mint, founded upon the "consumption and export" system, supplemented by circular inquiries among the producers. The Director, in his annual report for 1880, states the gross product for that fiscal year in round numbers as \$36,000,000 gold, \$37,700,000 silver (coinage value), and \$73,700,000 total.

3. Estimates of Dr. Rossiter W. Raymond, formerly United States Mining Commissioner, for the period covered by his official term.

4. Estimates of Prof. J. D. Whitney.

TABLE LVII.—*Dr. Soetbeer's estimate of the production of the precious metals in the United States to the close of 1875.*

Periods.	Number of years.	Gold product.			Silver product.		
		Total.	Yearly average.	Value.	Total.	Yearly average.	Value.
		Ounces.	Ounces.	Dollars.	Ounces.	Ounces.	Dollars.
1804-'20	17	1,929	113	39,876	.....	.....	.....
1821-'30	10	35,368	3,537	731,121	.....	.....	.....
1831-'40	10	273,295	27,329	5,649,509	.....	.....	.....
1841-'50	10	5,658,825	565,883	116,978,291	.....	.....	.....
1851-'55	5	14,275,673	2,855,135	295,104,343	1,334,325	266,865	1,725,149
1856-'60	5	12,394,757	2,478,951	256,222,359	996,725	199,345	1,288,666
1861-'65	5	10,722,832	2,144,566	221,660,603	27,972,602	5,594,520	36,165,777
1866-'70	5	12,217,918	2,443,584	252,566,773	48,389,387	9,677,877	62,562,638
1871-'75	5	9,565,344	1,913,069	197,733,203	90,798,425	18,159,685	117,393,284
Total	72	65,145,941	12,432,167	1,346,678,078	169,491,464	33,898,292	219,135,514

TABLE LVIII.—*Estimate of the production of the precious metals in the United States from 1848 to 1880, by fiscal years.*

[From reports of Hon. Horatio C. Burchard, Director of the Mint.]

Year.	Gold.	Silver.	Total gold and silver.
	Dollars.	Dollars.	Dollars.
1848	10,000,000	.....	10,000,000
1849	40,000,000	50,000	40,050,000
1850	50,000,000	50,000	50,050,000
1851	55,000,000	50,000	55,050,000
1852	60,000,000	50,000	60,050,000
1853	65,000,000	50,000	65,050,000
1854	60,000,000	50,000	60,050,000
1855	55,000,000	50,000	55,050,000
1856	55,000,000	50,000	55,050,000
1857	55,000,000	50,000	55,050,000
1858	50,000,000	50,000	50,050,000
1859	50,000,000	100,000	50,100,000
1860	46,000,000	150,000	46,150,000
1861	43,000,000	2,000,000	45,000,000
1862	39,200,000	4,500,000	43,700,000
1863	40,000,000	8,500,000	48,500,000
1864	46,000,000	11,000,000	57,000,000
1865	53,225,000	11,250,000	64,475,000
1866	53,500,000	10,000,000	63,500,000
1867	51,725,000	13,500,000	65,225,000
1868	48,000,000	12,000,000	60,000,000
1869	49,500,000	12,000,000	61,500,000
1870	50,000,000	16,000,000	66,000,000
1871	43,000,000	23,000,000	66,000,000
1872	36,000,000	28,750,000	64,750,000
1873	36,000,000	35,750,000	71,750,000
1874	33,490,902	37,324,594	70,815,496
1875	33,467,856	31,727,560	65,195,416
1876	39,929,166	38,783,016	78,712,182
1877	46,897,390	39,793,573	86,690,963
1878	51,206,360	45,281,385	96,487,745
1879	38,899,858	40,812,132	79,711,990
1880	36,000,000	37,700,000	73,700,000
Total	1,520,041,532	460,422,260	1,980,463,792

TABLE LIX.—*Bullion production of the United States from 1868 to 1875.*

[Estimated by Dr. Rossiter W. Raymond, United States Mining Commissioner.]

State or Territory.	1868.	1869.	1870.	1871.
	Dollars.	Dollars.	Dollars.	Dollars.
California.....	22,000,000	22,500,000	25,000,000	20,000,000
Nevada.....	14,000,000	14,000,000	16,000,000	22,500,000
Montana.....	15,000,000	9,000,000	9,100,000	8,050,000
Idaho.....	7,000,000	7,000,000	6,000,000	5,000,000
Oregon and Washington.....	4,000,000	3,000,000	3,000,000	2,500,000
Arizona.....	500,000	1,000,000	800,000	800,000
New Mexico.....	250,000	500,000	500,000	500,000
Colorado and Wyoming.....	3,250,000	4,000,000	3,775,000	4,763,000
Utah.....			1,300,000	2,300,000
From other parts.....	1,000,000	500,000	525,000	250,000
Total.....	67,000,000	61,500,000	66,000,000	66,663,000

State or Territory.	1872.	1873.	1874.	1875.
	Dollars.	Dollars.	Dollars.	Dollars.
California.....	19,049,098	18,025,722	20,300,531	17,753,151
Nevada.....	25,548,801	35,254,507	35,452,233	40,478,369
Montana.....	6,068,339	5,187,047	3,844,722	3,573,600
Idaho.....	2,695,870	2,500,000	1,880,004	1,750,000
Oregon and Washington.....	2,000,000	1,585,784	763,605	1,246,978
Arizona.....	625,000	500,000	487,000	750,000
New Mexico.....	500,000	500,000	500,000	325,000
Colorado and Wyoming.....	4,761,465	4,070,263	5,188,510	5,302,810
Utah.....	2,445,284	3,778,200	3,911,601	3,137,688
From other parts.....	250,000	250,000	100,000	500,000
Total.....	63,943,857	71,651,523	72,428,206	74,817,596

TABLE LX.—*Gold production of the Southern States from 1804 to 1850.*

[Estimates of Professor J. D. Whitney.]

Value of gold production by States.		Value of gold production in the respective divisions of time.	
Georgia.....	\$6,048,900	1804-'23.....	\$47,000
North Carolina.....	6,842,900	1824-'30.....	715,000
South Carolina.....	818,100	1831-'40.....	6,695,000
Tennessee and Alabama.....	263,800	1841-'50.....	7,715,300
Virginia.....	1,198,600	Total.....	15,172,300
Total.....	15,172,300		

BULLION PRODUCT OF THE WORLD.

The world's annual output, so far as ascertainable, is shown in the following tables, which state the sources according to political divisions, and also by continents. The data are for calendar years except for the United States, British Columbia, and Japan. Accurate statistics of the small production of gold and silver in Central America, that of silver in Canada, and gold in Nova Scotia are not available. The totals given are probably slightly under the actual amount. A comparison of the individual figures shows that the United States produce 33.13 per cent. of the gold yield of the whole world, 50.54 per cent. of the silver, and 40.91 per cent. of the total. Of the aggregate supply of the precious

metals, North America (including the United States, Mexico, and British Columbia) furnishes 55.78 per cent.

TABLE LXI.—*Annual bullion product of the world—political distribution.*

Country.	Gold.	Silver.	Total.
	Dollars.	Dollars.	Dollars.
United States*	33,379,663	41,110,957	74,490,620
Mexico	989,161	25,167,763	26,156,924
British Columbia†	910,804		910,804
Africa‡	1,993,800		1,993,800
Argentina Republic	78,546	420,225	498,771
Colombia	4,000,000	1,000,000	5,000,000
Rest of South America‡	1,993,800	1,039,190	3,032,990
Australia§	29,018,223		29,018,223
Austria	1,062,031	2,002,727	3,064,758
Germany§	205,361	6,938,073	7,143,434
Norway		166,270	166,270
Italy§	72,375	17,949	90,324
Russia§	26,584,000	415,676	26,999,676
Sweden	1,994	62,435	64,429
Rest of Europe		2,078,380	2,078,380
Japan	466,548	916,400	1,382,948
Total	100,756,306	81,336,045	182,092,351

* Census of 1880. † Actual export. ‡ From Dr. Soetbeer's estimate in 1875. § Estimated from production of other years.

TABLE LXII.—*Annual bullion product of the world—continental distribution.*

Continent.	Total bullion product.	Percentage of total product.
	Dollars.	Per cent.
North America	101,558,348	55.78
Africa	1,993,800	1.10
Australia	29,018,223	15.93
Europe, including Russia in Asia	39,607,271	21.75
Japan	1,382,948	0.76
South America	8,531,761	4.68
Total	182,092,351	100.00

EXPLANATION OF CHARTS.

The construction of the diagrams in the following charts is based upon the figures reached in the preceding compilation, which the plates are designed to exhibit graphically.

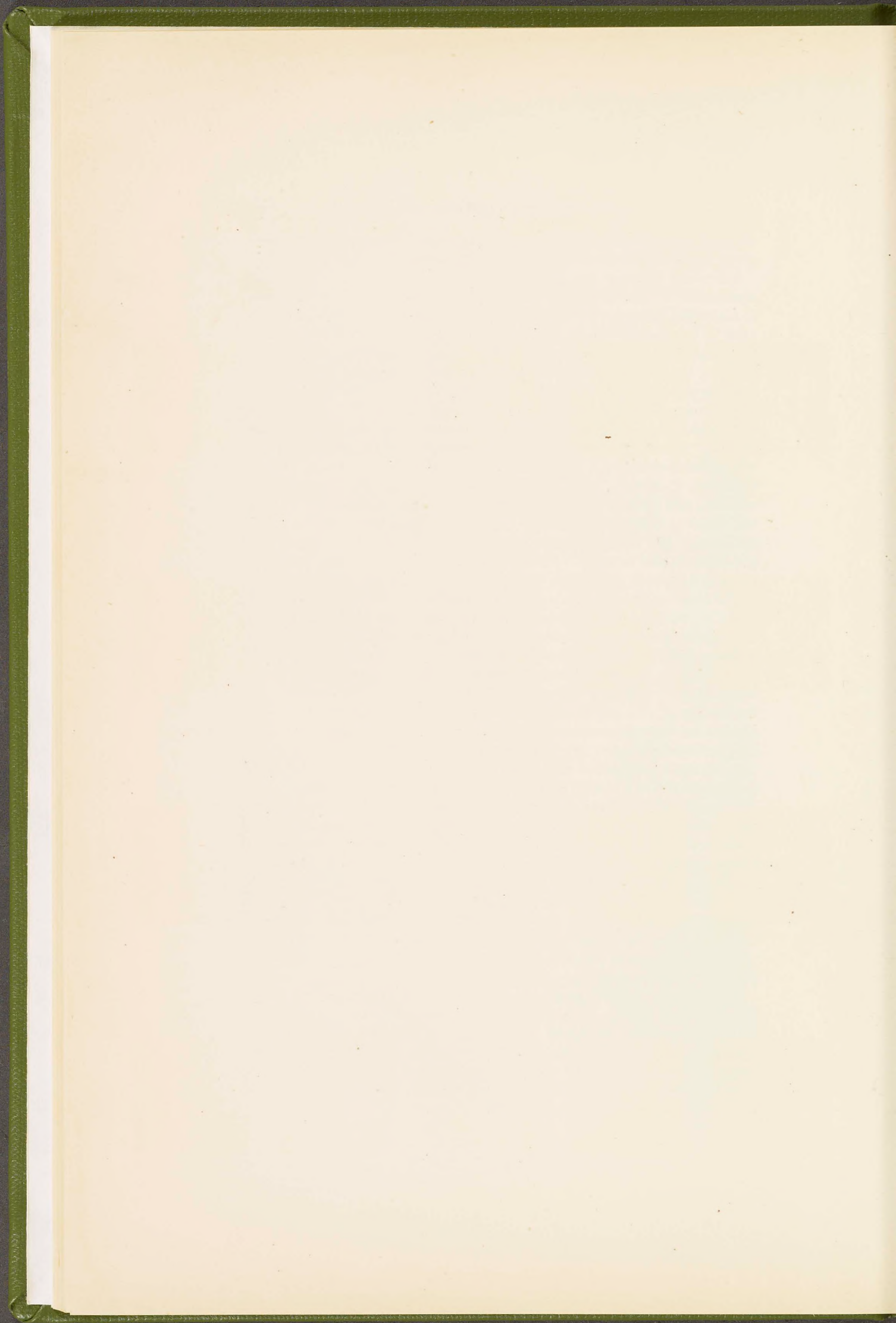
The plates illustrating the bullion product of the several States and Territories per square mile and per capita are founded upon the averages given by Tables XLVI and XLVII, in connection with the official measurements of areas by Mr. Henry Gannett, geographer of the Tenth Census, and the latest count of the population. The inner squares, printed in mauve, in each case denote the relative averages of bullion product (gold and silver combined), while the outer gray squares are of an arbitrary, uniform size, and represent in one chart the unit of area, and in the other, the unit of population—that is, the square mile and

the single individual. The length of the sides of the inner squares is given by the respective square roots of the averages.

The plate showing the absolute bullion product of the States and Territories, without reference to their size or population, is a repetition in a graphic form of the figures given in Table XLIII, which is the summary of the bullion product of the United States for the census year. It exhibits at a glance three distinct comparisons: that of the gold product, that of the silver, and that of both precious metals. The natural arrangement of the series, according to the totals, is observed. The extreme height of each column is in each case equal to the sum of the height indicating gold plus that representing the silver. Two essential features are in this manner presented to the eye: first, the wide difference between the product of the three leading mining States, Colorado, California, and Nevada, and that of the remainder of the country; and second, the remarkable diversity in the proportions of gold and silver in different localities. Colorado and California appear to be anti-types; the one showing a large predominance in the silver yield, the other in that of gold. A similar contrast is shown by another pair, Utah and Dakota.

The chart exhibiting the annual fluctuations in the yield of the precious metals since 1848 is in itself a history of the mining industry. The rapid increase in the product following the discovery of the gold fields in California, which reached its highest point in 1853, from which year, owing to the gradual exhaustion of the more accessible and richer deposits, the yield for a time gradually dwindled; the impulse given by the finding of the great Comstock lode, and the addition of the Idaho placers to the productive sources; the effect of the Crown Point and Belcher ore-body upon the total product; and, finally, the sudden and vast increase consequent upon the opening of the famous bonanza in the Consolidated Virginia and California mines—these are all pictured. The annals of the silver production, a comparatively recent addition to the national resources, are thus recorded in full. If the chart be carried forward beyond the limits of the census year, the rising curves would tell of Leadville and of Tombstone. The figures assumed in this chart are the annual estimates of the Director of the Mint for fiscal years up to the census year, for which the results reached in this compilation are quoted. It should be remarked that as the fiscal year embraces only the first half of the calendar year of the same designation, the curves in some cases are projected one space to the right of what their position would be were the calendar year to be taken.

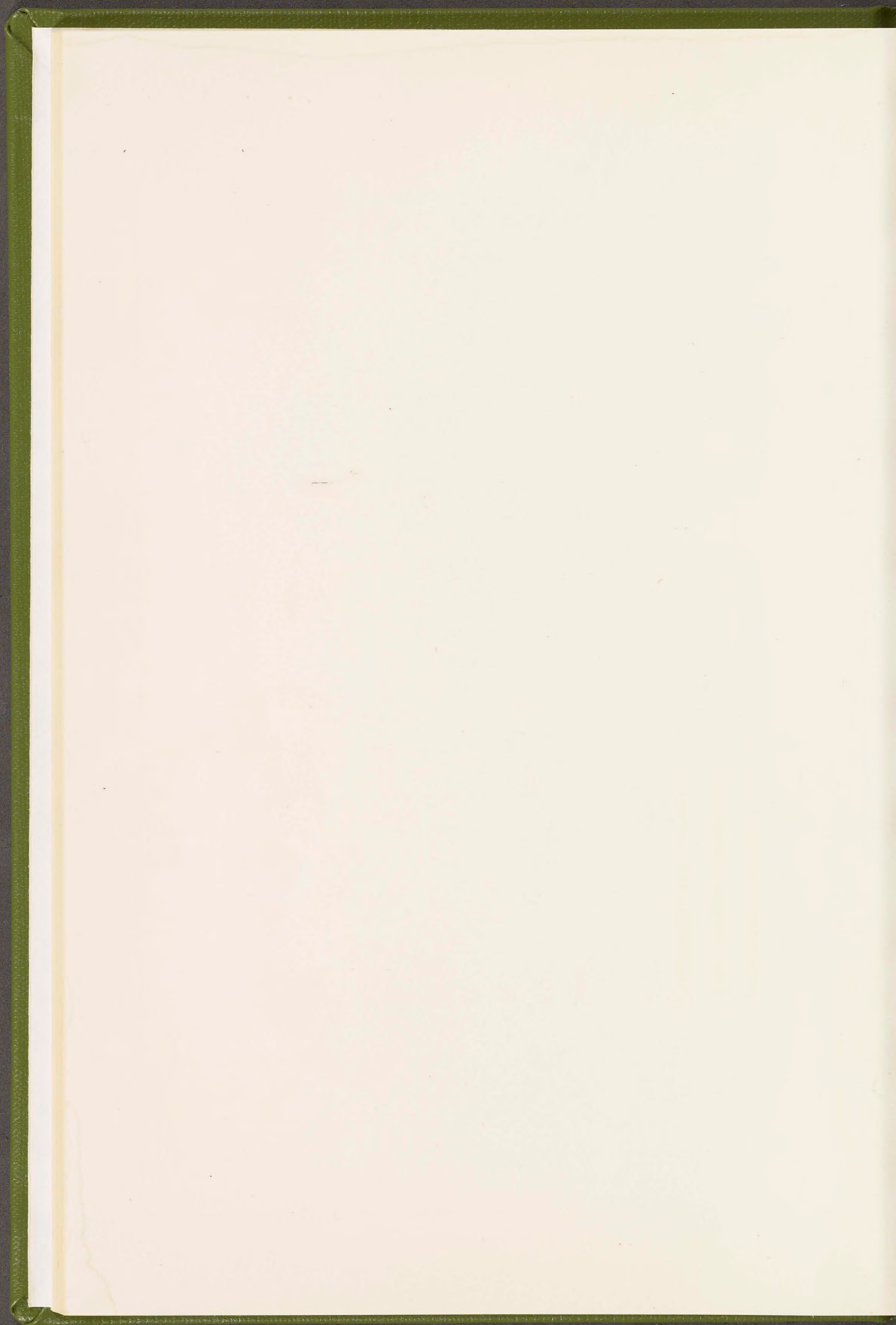
The two plates illustrating the world's annual product are based on the figures of Tables LXI and LXII. In one the yield is segregated, so far as possible, according to the political divisions; in the other, according to its continental distribution. The preponderance of the United States as a bullion-producing nation, and of North America as a bullion-producing continent, is in this manner, perhaps, more clearly indicated than by the tabular exhibit.



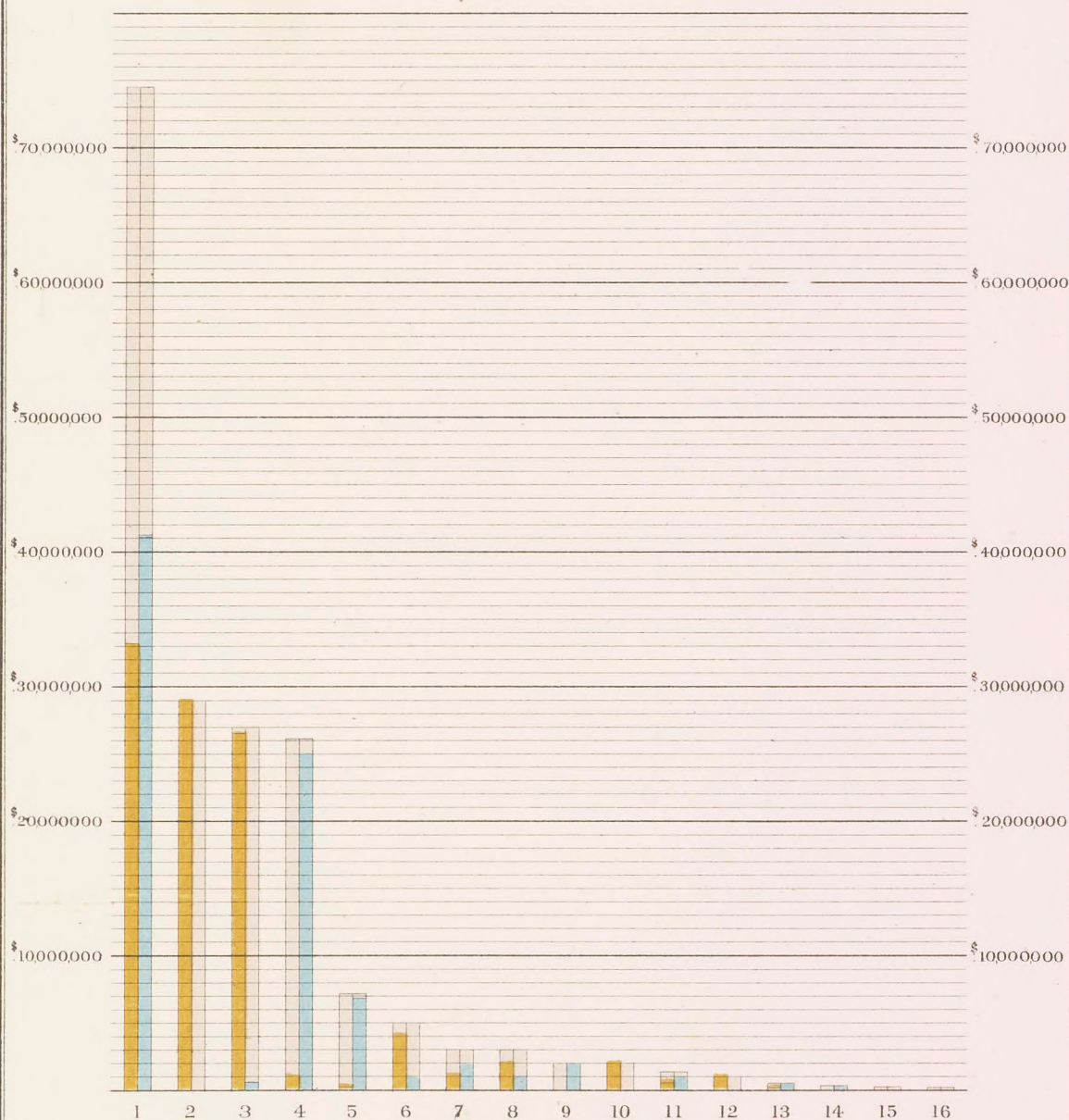
ANNUAL BULLION PRODUCT OF THE UNITED STATES.

*For fiscal years ending June 30, except 1860 for which the Census period is given.
If the curve for calendar years were given, points in 1855, 1876, 1877, and 1878 would appear one space to the left, respectively.*





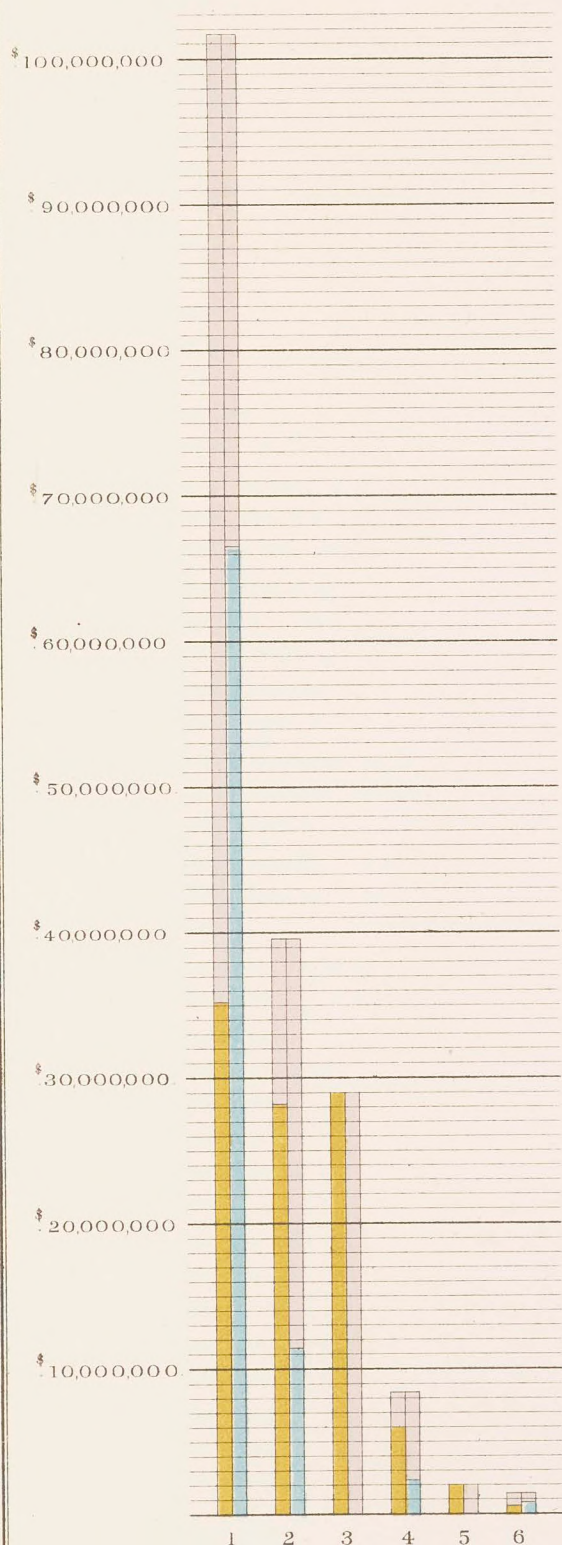
ANNUAL PRODUCT OF THE WORLD. (POLITICAL DISTRIBUTION.)



1. UNITED STATES. 2. AUSTRALIA. 3. RUSSIA. 4. MEXICO. 5. GERMANY. 6. COLOMBIA.
7. AUSTRIA. 8. SOUTH AMERICA, EXCEPTING COLOMBIA AND THE ARGENTINE REPUBLIC. 9. EUROPE,
EXCEPTING RUSSIA, GERMANY, AUSTRIA, NORWAY, ITALY AND SWEDEN. 10. AFRICA. 11. JAPAN.
12. BRITISH COLUMBIA. 13. ARGENTINE REPUBLIC. 14. NORWAY. 15. ITALY. 16. SWEDEN.

*The areas in old gold, indicate gold, those in light blue, silver, the relative totals
being shown by the extreme height of each column.*





**ANNUAL BULLION PRODUCT
OF THE WORLD.
(CONTINENTAL DISTRIBUTION.)**

1. NORTH AMERICA .
2. EUROPE, INCLUDING RUSSIA IN ASIA .
3. AUSTRALIA .
4. SOUTH AMERICA .
5. AFRICA .
6. JAPAN .

The areas in old gold, indicate gold, those in light blue, silver, the relative totals being shown by the extreme height of each column.



